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BIOLOGICAL MONITORING OF TOXIC TRACE METALS
Volume 2. Toxic Trace Metals in Plants and Animals of the World
Part I

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16. ABSTRACT

The needs and priorities in using biological accumulator organisms for monitoring toxic trace metals in plants and animals are analyzed. The toxic trace metals selected for study are antimony, arsenic, beryllium, boron, cadmium, chromium, cobalt, copper, lead, mercury, nickel, selenium, tin, and vanadium. Data on the toxicity to humans, abundance, production, use and emissions of trace elements are presented and sources and pathways to plants and animals listed.

Volume 1 of the two volumes evaluates available data for the purpose of selecting biological monitoring organisms to monitor the 14 selected toxic metals, and recommends various organisms for use in national and international monitoring systems and networks. This study is based on the data compilation in Volume 2.

Volume 2 brings together the majority of the significant data on bioaccumulation and bioconcentration of the 14 trace metals discussed, which are considered to be of most importance to man and his food organisms. This volume provides a concise reference of baseline data for delineating the background or "normal" levels of toxic trace metals as well as levels that occur under various pollutant conditions.

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FOREWORD

Protection of the environment requires effective regulatory actions based on sound technical and scientific data. The data must include the quantitative description and linking of pollutant sources, transport mechanisms, interactions, and resulting effects on man and his environment. Because of the complexities involved, assessment of exposure to specific pollutants in the environment requires a total systems approach that transcends the media of air, water, and land. The Environmental Monitoring Systems Laboratory at Las Vegas contributes to the formation and enhancement of a sound monitoring-data base for exposure assessment through programs designed to:

- develop and optimize systems and strategies for monitoring pollutants and their impact on the environment

- demonstrate new monitoring systems and technologies by applying them to fulfill special monitoring needs of the Agency's operating programs

Volume 1 of the two volumes in this report evaluates available data for the purpose of selecting biological monitoring organisms to monitor 14 of the more important toxic metals, and recommends various organisms for use in national and international monitoring systems and networks. This study is based on the data compilation in volume two.

Volume 2 brings together the majority of the significant data on bioaccumulation and bioconcentration of 14 of the trace metals of most importance to man and his food organisms. This volume provides a concise reference of baseline data for delineating the background or "normal" levels of toxic trace metals as well as levels that occur under various pollutant conditions.

The report was complied primarily to aid those who are seeking the best biological samplers to use in a biological monitoring system or network, and will help to show environmental movement, pathways, and sinks for selected metals in relation to biological organisms. Further information concerning these volumes and biological monitoring network design may be obtained from the Exposure Assessment Division at the Environmental Monitoring Systems Laboratory.

Glenn Schweitzer
Director
Environmental Monitoring Systems Laboratory
Las Vegas, Nevada

ABSTRACT

This volume reviews the concentration levels of fourteen selected toxic trace metals or matalloids in plants and animals of the world except man. The trace elements, selected on the basis of being toxic, being common or widespread, presenting a hazard or potential hazard, and becoming of greater importance, are antimony, arsenic, beryllium, boron, cadmium, chromium, cobalt, copper, lead, mercury, nickel, selenium, tin and vanadium.

This Volume 2 of two volumes lists data on the bioaccumulation and bioconcentration of the trace elements to provide the information required to select the best organisms for biological monitoring as described in Volume 1. Other objectives are to provide reference baseline data for delineating background or "normal" levels and levels that occur in polluted environments, to provide data on levels of trace metals that occur in food of man and domestic animals, and to show the ecological role organisms play in the environmental transport, pathways and sinks for these trace elements.

The compiled data are organized phylogenetically by taxonomic order of organisms for each trace metal. The data presented include the common and scientific name, geographic location, data on monitoring of environmental gradients, tissues analyzed, wet, dry or ash basis of measurement and the authority. The data are presented as ppm, or pCi/g for radioactive elements. The important toxic metals lead, cadmium, and mercury each have been measured in about 1,000 species of organisms.

Summaries of data on baselines, monitoring environmental gradients and selection of monitoring organisms are presented in Volume 1.

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I. INTRODUCTION

Toxic trace elements, especially those known as toxic metals or heavy metals, are becoming of greater importance to man as he mines and uses greater quantities of these metals and increases the pollution of his environment each year. There is still uncertainty concerning the levels of toxic metals that can be tolerated in the environment without causing health hazards to man. This is especially true with regard to long-term low-level exposures that may produce delayed effects after several decades. There is also the problem of contamination of biological organisms which serve as food, and the impact of these toxic materials on domestic animals and agricultural crops.

Bioaccumulation and bioconcentration of toxic elements by certain biological organisms cause increased interest to be focused on specific species of plants and animals. Some biological organisms are able to concentrate toxic metals many thousand times the level of metals found in aquatic systems. Some organisms can change the chemical form of an element to a more toxic form.

The presence of toxic trace elements in biological organisms is of great importance to man since he is dependent upon organisms for all of his food. The ingestion of toxic metals in food can have direct healh impacts either immediate or delayed. Toxic metals can also cause illness, death or decreased production in both animals and plants. The presence of trace elements in the biological organisms can be used to quantitatively measure the extent of contamination of man's environment. Changes in levels of toxic elements in organisms can also be used to show historic trends of pollution levels and to predict future levels.

In studying the relationships between toxic trace elements and biological organisms, the major areas of scientific interest and research are: 1) bioaccumulation, bioconcentration and biomagnification in organisms, 2) investigations concerning rate and type of accumulation in organisms following controlled exposure, and 3) toxicity studies to determine biological effects on organisms, including lethality and delayed effects, and 4) studies of effects on ecological communities and populations.

This compilation deals only with the first category on bioaccumulation, bioconcentration and biomagnification, with a small amount of data on experimental exposure to help delimit the special organisms or organs and tissues that would be of greatest value for biological monitoring.

The objective of this review (Volume 2) is to bring together the majority of the significant data available on bioaccumulation, bioconcentration and biomagnification of the most important toxic metals in biological organisms, except man. This study also provides data on the amounts of toxic metals that occur in food organisms of man including domestic animals, agricultural crops, fish and shellfish. It provides reference baseline data for delineating the background or "normal" levels in addition to levels that occur under various pollutant concentrations of the environment. This review enables selection of those biological organisms and tissues which could provide the best biological samplers for establishing a monitoring system or network. It can also be used to show environmental movement, pathways, and sinks for selected metals in relation to biological organisms.

These data have been analyzed for use in biological monitoring in Volume 1. They have been summarized to show baseline levels and maximum concentrations in polluted areas. The data on use of biological organisms to measure environmental gradients of each trace metal have also been reviewed.

The toxic trace elements were selected on the basis of the following criteria:

1) The elements are toxic to man and/or his food organisms.

2) The elements are fairly common and widespread.

3) Exposure to elements is sufficient to cause a hazard or potential hazard.

4) The elements are becoming of greater importance due to increased production and/or use.

On the basis of these criteria 14 toxic trace elements were selected. These toxic metals or metalloids are the following: antimony (Sb), arsenic (As), beryllium (Be), boron (B), cadmium (Cd), chromium (Cr), cobalt (Co), copper (Cu), lead (Pb), mercury (Hg), nickel (Ni), selenium (Se), tin (Sn), and vanadium (V). Some of these, such as cadmium, lead and mercury, are of immediate importance while others, such as beryllium, boron, vanadium and others, do not appear to be of more than local importance at present. Also, additional trace elements, such as manganese, zinc and others could have been considered for inclusion in the list.

While the scope of this compilation is to provide a worldwide and comprehensive coverage for the selected toxic trace elements, no attempt was made to make a complete or exhaustive coverage of the world literature as it is not practical and would result in much duplication. The scope of the project increased by several times after its initiation due to the geometrically increasing volume of data appearing each year. It was necessary to establish a cutoff date in 1977.

In a review article entitled "Trace Metals in Soils, Plants, and Animals" published in 1972, Dr. Donald J. Lisk states:

> "Research dealing with the existence and association of essential metals in soils and their mobility, reactions, and effects in biological systems has been extensive. The recent discovery of relatively high levels of mercury in fish in North America has now focused intense concern on

numerous other potentially toxic metals such as lead, cadmium, arsenic, selenium, chromium, nickel, beryllium, antimony, barium, zirconium and others which may be ubiquitous in ecosystems. This, in turn, has stimulated a spiraling number of surveys and other investigations of their effects. It is thus perhaps unfortunate that a reviw such as this could not instead be prepared five years hence when the expected mountain of new data will have accrued."

It is now over 5 years hence, the surveys have spiraled, and the mountain of new data has accrued! This report is an attempt to retrieve, compile, and partially evaluate the most important part of the accured mountain.

SOURCES OF DATA

The enormous volume of scientific data on bioaccumulation of toxic metals in biological organisms is scattered throughout the world scientific and popular literature. It is published in books, scientific journals of a wide range of technical disciplines, as well as in international, national, state and institution journals, proceedings of many scientific meetings and symposia, journals on methodology of measurement, popular articles and in newspapers and magazines. The data have been published in 16 or more of the languages of the world.

The majority of data for this compilation were taken from the original publications, published in scientific journals and proceedings of scientific meetings and symposia. Many of these sources provided full details of all or most of the information required to complete the tabls. However, many foreign small or obscure journals or reports were not available, so that it was necessary to us abstracts, citations of data in scientific papers and review articles. In using these secondary sources, there was often loss of important detail such as scientific names, geographic location, tissue used, or whether reported on a wet, dry or ash basis.

Several reviews have been written on marine or aquatic organisms. The first major review or compilation of data on bioaccumulation of trace elements was made on marine organisms by Vinogradov (1953) in his book entitled "The Elementary Chemical Composition of Marine Organisms" published as a memoir by the Sears Foundation for Marine Research. While this is an excellent compilation (with the usual errors of transcription of most large compilations) it is unfortunately based on data using the often unreliable analytical methods of the period 1900 to 1950. While some of these data, e.g. after 1925, have been quoted for comparison, or in the absence of other data, many are highly suspect. A report entitled "Accumulation of Trace Metals by Marine Organisms, Fish-Eating Birds and Freshwater Fish" by P. T. Johnson (1973) was contributed to by the present reviewer. This compilation provided valuable earlier references for the present study. A report by Bernhard and Zattera (1975) "Major Pollutants in the Marine Environment" reviewed selected biological data on eight trace metals and included levels in sea water and sediments. A report by Phillips and Russo (1978) on "Metal Bioaccumulation in Fishes and Aquatic Invertebrates, A Literature Review" compiled primarily experimental exposure and uptake studies, and cited some surveys. This study is mainly outside of the scope of the present review and was not used.

No comprehensive reviews or compilations of data on concentrations of trace metals in terrestrial animals or plants was discovered. Various documents review data on the effects of specific toxic metals such as "WHO Criteria Documents" and "Reviews of Environmental Effects of Pollutants" by Oak Ridge National Laboratory and EPA. In addition, reviews on "Medical and Biologic Effects of Environmental Pollutants" by the Committee on Medical and Biologic Effects of Environmental Pollutants, National Academy of Sciences have summarized information on effects of specific pollutants.

In the Present compilation, review of the literature extended to 1977. Selected important documents were included after this date, especially for trace metals for which there was limited data. Compilations for some of the metals are fairly complete, but for some, such as mercury, it was necessary to select representative data since the volume of information was extensive and partly repetitious.

METHOD OF COMPILATION AND PRESENTATION OF DATA

An enormous amount of data on measurement of toxic elements in biological organisms has been published. It was necessary to compile these data in an organized, orderly and comparable fashion in order to allow evaluation of their significance and value, and to determine those species and the specific tissues best suited for developing efficient and effective biological monitoring systems and networks.

The most important available data published in the world literature on the bioaccumulation and bioconcentration of the 14 selected toxic trace metals have been compiled for all biological organisms except man. The data are presented for each toxic trace metal in a series of separate tables. The tables are organized by phylum and order in phylogenetic sequence starting with mammals and continuing with birds, reptiles, amphibia, fish, molluscs, arthropods, echinodrms, and other invertebrates. These are followed by higher plants (spermatophytes), mosses, lichens, fungi, and algae. In some cases, the mammals and birds have been divided into aquatic, predatory, or other groups, and fish have been divided into marine and freshwater species.

The species are designated with the scientific name, including genus and species and in some cases subspecies, and usually the common name (in English). For some species, especially fish, the scientific name has been changed. The species is then listed under the new scientific name and the older synonym name (as listed in the publications cited) is included in parentheses to permit reference to the publications, e.g. Melanogramma aeglefinus (=Gadus aeglefinus). Latest synonymy has been taken from various publications, such as Amer. Fish. Soc. (1970) "A List of Common and Scientific Names of Fishes from the United States and Canada." Where only a non-specific common name is given, e.g. shrimp, which could belong to any of several genera or species, the data are presented at the end of the alphabetical list of scientific names in the taxonomic group to which it belongs.

The geographic location of the collection site of the organism is given by country, State, or more specific location, or by ocean, sea, gulf, lake or river. Marine specimens are listed by the country nearst the collection area, which usually means offshore from the country or State listed. If data on pollution contamination and concentration gradients were published, more specific geographic locations are usually presented.

Data are presented on levels of toxic trace elements in relation to polluted vs. non-polluted areas. The increase in bioaccumulation or bioconcentration resulting from pollution sources, whether natural or resulting from activitis of man, are of great importance in developing a biological monitoring system. The source of pollution or exposure is presented, and the metal concentration of exposed organisms is often compared with controls. If a gradient of the level of metal from a source occurs, and measurements have been made on biological organisms at different distances from the source, this has been included in concise form. The data in these tables using biological organisms to monitor environmental gradients of trace element metals have been summarized in Volume 1 to assist in selecting the best potential monitoring organisms.

The tissue (or organ) of an organism analyzed for trace metal content is presented if published. This is of great importance since certain tissues or organs bioaccumulate or bioconcentrate metals at different concentrations in comparison with other tissus or organs. It is important to select the best tissue(s) or organ(s) in developing an efficient biological monitoring system. Analysis of different tissues or organs of the same species are also presented if published. Some data are also available for comparing the metal contents of organisms of different size, age, or time of the year. Data on trace metal concentrations are also included for different years or over historical periods, if included in the publications.

The basis of calculation of concentration of a metal in an organism is critical, whether based on live or wet weight (W), dry weight (D), or ash weight (A). Even though the basis of calculation may be given, there is much inherent variation. An animal may be killed and drained of blood and drying may occur, or plants may air dry and wilt during shipment to the laboratory, yet the specimen may be considered on a live or wet weight basis. Some specimens are also washed to remove external contamination, and excess water allowed to air dry before analysis.

Dry weight basis is also variable since the specimen may be air dried (in high or low humidity) or oven dried at any of various temperatures. This may result in loss of some of the metal content. For example, it has been shown under certain conditions that 50 percent of the mercury may be lost by oven drying the specimens. The difference between live or wet weight and dry weight is usually about 80 percent but may be 90 percent or more in specific marine organisms such as comb jellies (Ctenophora) or in certain plants. In preserved bones, nails, or hair the difference between "wet" and "dry" basis may be less than 10 percent. The difference between air dry and oven dry can be considerable in some organisms.

The ash weight basis is probably less variable, but ashing the specimen can result in losss of the metal content. It is more difficult to convert ash weight to wet or dry weight for comparison. Ash weight basis formerly was used more frequently than in more recent studies. It has been used rather extensively in analyzing trace metal composition of plants.

Many of the publications consulted provide excellent details on methodology and techniques and careful statistical evaluation, but fail to state the basis for calculation of metal content. They may state that the specimens have been dried and/or ashed during the process of sample preparation, but fail to state the basis on which the data are calculated and presented.

If published papers include comparative wet, dry and ash basis data, these data are included in this review to help in evaluating and comparing closely related species for which comparable-basis data are not available.

The data in this report are expressed in parts per million (ppm) on a weight basis (except data on radionuclides). The data have been compiled from publications and reports that may present the original results as ppm, or as any of the following: picograms, nanograms, micrograms, milligrams, or as grams per gram, per 100 grams, per milligram, or per kilogram. Data are also presented in the literature as percent (%) per gram, per 100 grams, or per kilogram, or they are expressed as % times 10^{-6} or other exponent. All these were calculated by the reviewer to parts per million to permit better comparison and for ease of handling and analysis.

Data on content of radionuclides are presented as disintegrations per minute (dis/min) or more usually as picocuries per gram (pCi/g) or per milligram (pCi/mg). Limited experimental data on radionuclides are included because this usually involves uptake studis, which are not within the scope of this report.

The data on metal contents are often presented as a single figure representing a mean or a single measurement. Frequently the data include ranges indicating the minimum and maximum. These are presented by enclosing them in parentheses. This is frequently followed by the arithmetic mean. If the standard dviation (SD), or standard error (SE), has been calculated, this follows the mean with a plus-or-minus (±) sign. If the median or geometric mean are calculated, these are designated by (med.) or (geom. mean). For some data, when no arithmetic mean is presented in the publication, the mean has been calculated by the reviewer and included following the range.

Under "authority", the author (or authors) and the date of publication are given, which refers to the refernces listed under literature cited.

After careful evaluation, it was decided that the most critical data needed for selection of potential biological monitoring organisms are those items considered above. However, it is fully recognized that other information is highly desirable and would be of value, especially in evaluating the validity of the data. The information which could not be included due to space limitations were data on sample collection, sample preparation (some data are presented in this review on the effects of washing hair or leaf samples), sample size, analytical equipment and methods used, and validation (e.g. use of standard comparison samples or adding known quantities of an element to determine percent recovery). Many of the original publications consulted, present all or part of this information, while some do not. Therefore, if this information is needed, the data presented in this river should be considered as a reference source for obtaining more detailed information. Also, since about 20 percent of the data in this voluminous compilation was taken from secondary sources such as reviews, abstracts, translations, and summary translations of some foreign articles, consulting the original publications may be desirable for more specific uses.

PROBLEMS AND SOURCES OF ERROR IN EVALUATING DATA

There has been great improvement in the methods of analysis of toxic trace metals in biological materials since the compilation of data on toxic metals by Vinogradov (1953). However, this is a difficult technical field and there are many inherent problems and possible sources of errors in sampling, analyzing, and presentation of data.

Collection of samples first requires correct scientific identification of the species being sampled. There must be an adequate sample, preferably from a number of individual organisms of the same species. For example, in analyzing the toxic metals in bivalve molluscs, the weight, size, age, sex, exposure, temperature, salinity, time of year or season, position of sampling and coexistence of several metals are of importance (Phillips, 1977). In sampling animal or human hair to determine trace metal concentrations, the age, sex, location of hair on body, distance of hair sample from base of hair, external contamination, type of washing solution and washing procedures are of importance (Jenkins, 1979). In sampling plant material, the external contamination of leaves, branches, roots and bark is important. Various washing procedures with water, alcohol, or detergents may greatly affect the results (Martin & Little, 1973). Samples should be collected without contamination from metals in using collecting equipment, knives, and other dissection equipment, and storage containers.

There is inherent error in sampling, due to loss of blood and body fluids or plant sap which can affect measurement of body or plant weight. Unavoidable drying and dessication and washing procedures and removal of excess moisture is a source of error for live or wet basis measurement. For making measurements on a dry weight basis, error is possible depending on whether specimens are air dried (at different relative humidities) or at different oven temperatures.

Analysis of trace metal content is highly technical and requires use of modern improved analytical equipment and strict avoidance of any contamination. To obtain high precision and confidence in the results, it is necessary to use standard samples, e.g. standardized kale or orchard leaves, analysis of additions of known quantities of trace element, and interlaboratory comparison studies. This is most important when measuring levels near the threshold limits of detection of trace elements, or when the presence of other elements may affect the results. Interlaboratory comparisons of analytical procedures has helped greatly to reduce errors. More recent determinations, using more sophisticated and accurate analytic equipment and methods, have been given greater credence than earlier determinations. Some of the earlier data, before 1950, and selected data in the review by Vinogradov (1953) are presented for comparison only, and most should be considered as questionable or suspect, especially if the data are greatly different from recent data analysed by more reliable equipment and methods. These older data have rarely been used in selecting proposed biological monitoring organisms and in analysis of biological monitoring of environmental gradients of trace elements in Volume 1.

In addition to problems and errors in sampling and analysis, there are also problems of human error in analysis, computation, copying, typographical, and printing errors, especially in abstracts, reviews and compilations where important data are often omitted, e.g. such as whether wet, dry or ash basis of measurement is used.

Despite all of the inherent and other potential errors in analyzing levels of trace metal elements in biological organiams, there is often good correlation of results even from different laboratories in different parts of the world. The relatively recent progress in improving analytical equipment and procedures has greatly increased the validity of data. In addition, for certain trace metals such as mercury, lead, and cadmium, there is often an adequate amount of confirmatory data for a specific tissue of a single species based on analyses by various workers, so that it is possible to accept the confirmed data as probably valid. While data in some studies may not be completely valid or confirmed, data have been used only for comparative purposes, such as comparison of levels in different tissues of the same species, or comparing samples at different distances from a source. These comparative data may be acceptable if done by the same laboratory.

It is necessary to consider all of these problems and errors and to treat the data with appropriate scientific reservation, especially older data. Nevertheless, there now exists an extremely valuable body of highly useful data on the levels and concentrations of toxic metals in biological organisms.

SPECIES OF PLANTS AND ANIMALS ANALYZED

The extent to which each trace metal has been analyzed in biological organisms is indicated in the summary of numbers of species of plants and animals analyzed. This shows that the important toxic metals lead, cadmium, and mercury have each been measured in about 1,000 species of organisms. If mercury had been more exhaustively reviewed the figure would increase substantially. There are also fairly large numbers of species analyzed for arsenic, chromium, cobalt, copper and nickel. While the number of species analyzed for beryllium (76 species) and for antimony, boron, and tin are relatively small, special effort was made to obtain all of the available data for these trace metals.

Many more species of animals than plants (about two times or more) have been analyzed for antimony, arsenic, cadmium, lead and mercury while more plant species have been analyzed for boron and nickel.

The numbers of species analyzed for each trace metal are probably a good indication of the level of effort and interest in each trace metal. The totals for all metals in the summary (vertical columns) includes counting some of the specis several times since in many cases the same species was analyzed for several different trace metals.

II TRACE METALS IN BIOLOCICAL ORGANISMS.

ANTIMONY IN MAMMALS(1)

Species	Locality	Tissue	Analysis(2) PPM	Authority
Pronghorn antelope *Antilocapra americana*	Idaho	hair	(0.4-0.97) 0.86	Huckabee et al. (1972)
Coyote *Canis latrans*	Wyoming	"	(0.09-1.8) 0.67	"
Guinea pig *Cavia porcellus*	United States	liver	D (1.4-1.9)1.6	Furr et al. (1976)
" "	"	kidney	D (0.3-0.8)0.5	"
" "	"	muscle	D (0.5-2.5)1.5	"
" "	"	adrenal	D (2.3-9.5)5.1	"
" "	"	spleen	D (1.6-4.4)2.8	"
Elk *Cervus canadensis*	Idaho	hair	(0.9-13.0)4.2	Huckabee et al. (1972)
Red-backed vole *Clethrionymys gapperi*	Wyoming	"	(0.1-0.6)0.3	"
Chipmunk *Eutamias sp.*	"	"	1.8	"
Vole *Microtus longicaudus*	Idaho	"	2.4	"

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Mountain vole Microtus montanus	Wyoming	hair		1.9	Huckabee et al. (1972)
Meadow vole Microtus pennsylvanicus	"	"		1.3	"
Richardsons vole Microtus richardsoni	"	"		0.7	"
Mouse Mus musculus		lung	W	0.012	Molokhia & Smith (1969)
" "		kidney	W	0.01	"
" "		spleen	W	0.01	"
" "		liver	W	0.007	"
" "		bone	W	0.006	"
" "		other organs	W	<0.005	"
" "	15 days after ingestion of Sb, highest levels were in teeth, and flat bones of skull				"
" "	Dosed with 20 mg/kg tartar emetic--to 16 hrs.:				Smith (1970)
" "	" "	plasma	W	(0.35-2.35)	"
" "	" "	RBC	W	(0.33-5.88)	"
Mule deer Odocoileus hemionus	Idaho	hair		(0.06-12.0)4.2	Huckabee et al. (1972)
Mountain goat Oreamnus americanus	"	"		(0.28-0.29)	"
Bighorn sheep Ovis canadensis	Wyoming	"		1.0	"

Harbor seal Phoca vitulina	Great Britain	blood	W	0.002±0.001	Hamilton (1976)
" "	"	spleen	W	0.02±0.01	"
" "	"	heart	W	0.03±0.01	"
" "	"	muscle	W	0.004±0.0007	"
" "	"	kidney	W	0.004±0.001	"
" "	"	liver	W	0.008±0.003	"
Shrew Sorex vagrans	Wyoming	hair		(0.3-2.5) 1.14	Huckabee et al. (1972)
Zapus princeps	"	"		0.0	"
" "	"			0.06	"

ANTIMONY IN BIRDS (1)

Species	Locality	Tissue	Analysis (2) PPM	Authority
Mallard duck *Anas platyrhynchos*	Canada	feather	D <0.2	Kelsall (1970)
Black duck *Anas rubripes*	"	"	D <0.2	"
White-fronted goose *Anser albifrons*	"	"	D <0.2	"
Lesser scaup *Aythya affinis*	"	"	D <0.2	"

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ANTIMONY IN MARINE FISH (1)

Species	Locality	Tissue	Analysis (2) PPM		Authority
Silverfish *Argyrozona argyrozona*	S.W. Africa	muscle	W	0.029	Van As et al. (1975)
Atractoscion aequidens	"	"	W	0.059	"
Bogue *Boops boops*	Adriatic Sea		W	0.16	Strohal et al. (1975)
Pilchard *Clupea pilchardus*	"		W	0.61	"
Chrysoblephus gibbiceps	S.W. Africa	muscle	W	0.0020	Van As et al. (1975)
Wrasse *Ctenolabrus rupestris*	Sweden		D	0.2	Noddack & Noddack (1940)
Lanternfish *Diaphus dumerili*	N.W. Africa		D	0.022	Leatherland et al. (1973)
Adriatic anchovy *Engraulis encrasicholus*	Adriatic Sea		W	0.51	Strohal et al. (1975)

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Priest shark *Etomopterus spinax*	N.W. Africa	liver	D	(0.003-0.01)	Leatherland et al. (1973)
Rock cod *Gadus callarius*	Great Britain	muscle	D	0.011	Leatherland & Burton (1974)
Lanternfish *Hygophum macrochir*	N.W. Africa		D	0.025	Leatherland et al. (1973)
Kabeljou *Johnius hololepidotus*	S.W. Africa	muscle	W	0.018±SD 0.006	Van As et al. (1975)
Lithognathus lithognathus	"	"	W	0.019	"
Angler *Lophius piscatorius*	"	"	W	0.066	"
Hake *Merluccius capensis*	"	"	W	0.075±SD 0.062	"
Dover sole *Microstomus pacificus*	Los Angeles	liver	W	(0.001-0.007)	DeGoeij et al. (1974)
Bass *Morone labrax*	Great Britain	muscle	D	0.010	Leatherland & Burton (1974)
Mullet *Mugil richardsoni*	S.W. Africa	"	W	0.024	Van As et al. (1975)
Hottentot *Pachymetopon grande*	"	"	W	0.19	"
Sea bream *Pagellus erithrinus*	Adriatic Sea		W	0.24	Strohal et al. (1975)
Platichthys flesus	Great Britain	muscle	D	0.006	Leatherland & Burton (1974)
Sardine *Sardinops ocellata*	S.W. Africa	"	W	0.26	Van As et al. (1975)
Chub mackerel *Scomber japonicus*	"		W	0.19±SD 0.17	"

Atlantic mackerel *Scomber scombrus*	Adriatic Sea		W	0.52	Strohal et al. (1975)
" "	Great Britain	muscle	D	0.006	Leatherland & Burton (1974)
Atlantic saury *Scomberesox saurus*	N.W. Africa	"	D	0.003	Leatherland et al. (1973)
" "	"	heart	D	0.017	"
" "	"	liver	D	0.007	"
Scombrops dubius	S.W. Africa	muscle	W	0.055	Van As et al. (1975)
Yellowtail *Seriola pappei*	"	"	W	0.057±SD 0.042	"
Sole *Solea solea*	Adriatic Sea		W	0.49	Strohal et al. (1975)
Dogfish shark *Squalus acanthius*	Sweden		D	0.2	Noddack & Noddack (1940)
Sole *Synaptura marginata*	S.W. Africa	muscle		0.14±SD 0.09	Van As et al. (1975)
Horse mackerel *Trachurus trachurus*	Adriatic Sea		W	0.05	Strohal et al. (1975)
" "	S.W. Africa	muscle	W	0.028	Van As et al. (1975)
Rouget, sea robin *Triglia capensis*	"	"	W	0.020	"
Kingslip *Xiphurus capensis*	"	"	W	0.037± SE 0.032	"
"Fish"				(0.0005-0.009)	Rancitelli et al. (1969)
"				(0.0001-0.11)	"

ANTIMONY IN FRESHWATER FISH(1)

Species	Locality	Tissue	Analysis(2) PPM		Authority
Whitefish *Alburnus sp.*	Danube R. Austria		D	0.0	Rehwoldt et al. (1975)
Alewife *Alosa pseudoharengus*	Great Lakes	whole	W	(0.005-0.1)	Lucas et al. (1970)
Eel *Anguilla anguilla*	Great Britain	muscle	D	0.015	Leatherland & Burton (1974)
Goldfish *Carassius auratus*	Great Lakes	liver	W	(0.005-0.1)	Lucas et al. (1970)
Lake herring *Coregonus artedii*	"	"	W	(0.005-0.1)	"
Lake whitefish *Coregonus clupeaformis*	"	muscle	W	(0.0022-0.0031)	Uthe & Bligh (1971)
" "	"	liver	W	(0.005-0.1)	Lucas et al. (1970)

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Carp *Cyprinus carpio*	Danube R. Austria		D	0.0	Rehwoldt et al. (1975)
Northern pike *Esox lucius*	Great Lakes	muscle	W	(0.0032-0.0043)	Uthe & Bligh (1971)
White bass *Morone chrysops* (= Roccus chrysops)	"	liver	W	(0.005-0.1)	Lucas et al. (1970)
Spottail shiner *Notropis hudsonius*	"	whole	W	(0.005-0.1)	"
American smelt *Osmerus mordax*	Lake Erie	muscle	W	0.0035	Uthe & Bligh (1971)
Yellow perch *Perca flavescens*	"	"	W	0.0031	"
Trout-perch *Percopsis omiscomaycus*	Great Lakes	whole	W	(0.005-0.1)	Lucas et al. (1970)
Round whitefish *Prosopium cylindraceum*	"	liver	W	(0.005-0.1)	"
Lake trout *Salvelinus namaycush*	"	"	W	(0.005-0.1)	"
" "	New York		W	(0.046-0.86)	Tong et al. (1974)
Walleye pike *Stizostedion vitreum vitreum*	Great Lakes		W	(0.005-0.1)	Lucas et al. (1970)

ANTIMONY IN LOWER ANIMALS (1)

Species	Locality	Tissue	Analysis (2) PPM		Authority
MOLLUSCA					
Buttercup *Anodonta cygnea*	Great Britain		D	(0.029-0.054)	Leatherland & Burton (1974)
Northern whelk *Buccinum undatum*	"		D	0.012	"
Edible cockle *Cerastoderma edule* (=Cardium edule)	"	soft parts	D	(0.034-0.063	"
" "	"	mantle cavity	D	0.18	"
Black mussel *Choromytilus meridionalis*	S.W. Africa	soft parts	W	0.20	Van As et al. (1975)
Portuguese oyster *Crassostrea angulata*	Great Britain	"	D	0.0	Leatherland & Burton (1974)
American oyster *Crassostrea virginica*	Texas	shell	D	1.0	Smith & Wright (1962)

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Atlantic slipper shell *Crepidula fornicata*	Great Britain		D	(0.038-0.053)	Leatherland & Burton (1974)
White mussel *Donax sera*	S.W. Africa	soft parts	W	0.18±SD 0.08	Van As et al. (1975)
Abalone *Haliotus midae*	"	muscle	W	0.083	"
Periwinkle *Littorina littoralis*	Great Britain		D	0.124	Leatherland & Burton (1974)
Periwinkle *Littorina littorea*	Great Britain		D	(0.095-0.10)	"
Squid *Loligo vulgaris*	Adriatic Sea		W	0.84	Strohal et al. (1975)
Blue mussel *Mytilus edulis*	New Zealand		D	<30.0	Brooks & Rumsby (1965)
" "	Great Britain		D	(0.042-0.047)	Leatherland & Burton (1974)
Mussel *Mytilis galloprovincialis*	Adriatic Sea	soft parts	W	0.51	Strohal et al. (1975)
Dog whelk *Nucella lapillus*	Great Britain		D	(0.007-0.014)	Leatherland & Burton (1974)
Octopus *Octopus vulgaris*	Adriatic Sea		W	0.92	Strohal et al. (1975)
Oyster *Ostrea edulis*	Great Britain		D	(0.010-0.015)	Leatherland & Burton (1974)
Oyster *Ostrea sinuata*	New Zealand	muscle	D	80.0	Brooks & Rumsby (1965)
" "	"	other organs	D	<30.0	"

European limpet *Patella vulgata*	Great Britain (contam. area)		D	0.12	Leatherland & Burton (1974)
" "	" (non-contam.)		D	(0.060-0.070)	"
Scallop *Pecten novaezelandiae*	New Zealand		D	<30.0	Brooks & Rumsby (1965)
Squid *Sepia officinalis*	Great Britain	gill	D	0.026	Leatherland & Burton (1974)
" "	"	mantle	D	0.010	"
CRUSTACEA					
Decapod *Acanthephyra eximia*	N.W. Africa		D	0.035	Leatherland et al. (1973)
Copepod *Acartia clausi*	Greece		D	(0.06-1.1) 0.31	Zafiropoulos & Grimanis (1977)
"Amphipods"	S.W. Africa		W	0.009	Van As et al. (1975)
"Copepods"	"		W	(0.037-6.1)	"
"	Adriatic Sea		W	(0.12-0.40)	Strohal et al. (1975)
Diplodus annularis	"		W	0.23	"
Mysidacid *Eucopia sculpticauda*	N.W. Africa	whole	D	0.011	Leatherland et al. (1973)
Rock lobster *Jasus lalandii*	S.W."	muscle	W	0.12±SD 0.07	Van As et al. (1975)
Copepod *Labidocera acutifrons*	N.W. "	whole	D	0.037	Leatherland et al. (1973)
Decapod *Leander serratus*	Adriatic Sea		W	0.53	Strohal et al. (1975)

Euphausid *Meganyctiphanes norvegica*	N.W. Africa	whole	D	0.037	Leatherland et al. (1973)
Decapod *Oplophorus sp.*	"		D	0.055	"
Shrimp *Palaemon elegans*	Great Britain		D	0.016	Leatherland & Burton (1974)
Decapod *Systellaspis debilis*	N.W. Africa		D	0.013	Leatherland et al. (1973)
ECHINODERMATA					
Sea urchin *Arbacia lixula*	Adriatic Sea	whole	D	5.5	Papadopoulou & Kanias (1976)
Sea star *Asterias rubens*	Sweden	no viscera	D	0.10	Noddack & Noddack (1940)
" "	Great Britain		D	0.010	Leatherland & Burton (1974)
Sea urchin *Brissopsis lyrifera*	Sweden	no viscera	D	0.18	Noddack & Noddack (1940)
Sea urchin *Echinaster sepositus*	Adriatic Sea	whole	D	0.020	Papadopoulou & Kanias (1976)
Sea cucumber *Holothuria tubulosa*	"	"	D	0.050	"
Starfish *Marthasterias glacialis*	Great Britain		D	0.027	Leatherland & Burton (1974)
" "	Greece	whole	D	0.020	Papadopoulou & Kanias (1976)
Serpent star *Ophioderma longicauda*	Adriatic Sea	"	D	0.010	"

Sea urchin *Paracentrotus lividus*	Adriatic Sea	whole	D	0.070	Papadopoulou & Kanias (1976)
Sea urchin *Sphaerechinus granularis*	"	"	D	0.13	"
Sea cucumber *Stichopus tremulus*	Sweden	no viscera	D	0.24	Noddack & Noddack (1940)
TUNICATA					
Tunicate *Botryllus schlosseri*	Great Britain		D	0.26	Leatherland & Burton (1974)
Tunicate *Ciona intestinalis*	Sweden		D	0.10	Noddack & Noddack (1940)
" "	Greece	whole	W	0.0070	Papadopoulou & Kanias (1977)
" "	"	"	D	0.16	"
" "	"	tunic	W	0.0050	"
" "	"	"	D	0.15	"
" "	"	other than tunic	W	0.016	"
" "	"	"	D	0.40	"
Tunicate *Microcosmus sulcatus*	"	whole	W	0.016	"
" "	"	"	D	0.10	"
Tunicate *Pyrosoma sp.*	N.W. Africa	"	D	0.023	Leatherland et al. (1973)
Tunicate *Styela clava*	Great Britain	"	D	0.15	Leatherland & Burton (1974)
PORIFERA					
Sponge *Halichondria panicea*	N.W. Africa		D	0.089	"

Sponge *Halichondria sp.*	Sweden		D	0.08	Noddack & Noddack (1940)
COELENTERATA					
Jellyfish *Cyanea capillata*	"	whole	D	0.16	"
" "	New England	"	A	ND	Nicholls et al. (1959)
Sea anemone *Metridium dianthus*	Sweden		D	0.23	Noddack & Noddack (1940)
Tealia felina	Great Britain		D	0.022	Leatherland & Burton (1974)
ANNELIDA					
Ragworm *Nereis diversicolor*	"		D	0.031	"
PROTOZOA					
Schistosoma mansoni			D	1.0	Smith (1970)
SCYPHAZOA					
Pelagia sp.	N.W. Africa	whole	D	0.043	Leatherland et al. (1973)
CHAETOGNATHA					
Arrowworm *Sagitta sp.*	S.W. Africa		W	(0.22-1.2)	Van As et al. (1975)

ANTIMONY IN HIGHER PLANTS (1)

Species	Locality	Tissue	Analysis (2) PPM		Authority
"Angiosperms"			D	0.6	Bowen (1966)
Swiss chard *Beta vulgaris cicla*	United States (grown in soil pH 5.5)		D	2.2	Furr et al. (1976)
" " "	" " " pH 6.5		D	4.4	"
" " "	" " " pH 6.0		D	3.7	"
" " "	" (sludge fortified, pH 6.5)		D	11.5	"
" " "	" " " pH 5.5		D	6.1	"
Kale *Brassica oleracea acephala*				0.07	Rancitelli et al. (1969) in O'Toole et al. (1971)
Northern reed grass *Calamagrostis canadensis*	N.W. Territories	leaf & stem	D	(2.47-15.4)	O'Toole et al. (1971)
Tea *Camellia sinensis*		leaf		0.04651±SD 0.00625	Shah et al. (1971)
Orange *Citrus sinensis*				0.00004	In O'Toole et al. (1971)

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Coffee *Coffea arabica*		bean		(0.00554-0.0158)	Shah et al. (1971)
Tobacco *Nicotiana tabacum*		leaf		10.6	Nadkarni et al. (1970)
" "		in cigarette smoke		1.9	"
" "		leaf	D	2.8	Nadkarni & Ehman (1970)
" "		stem	D	0.66	"
" "		tobacco, cigarette	D	(0.3-38.0)	"
" "		", pipe	D	(8.5-13.0)	"
" "		", cigar	D	(0.5-1.2)	"
Ponderosa pine *Pinus ponderosa*	Idaho	wood	D	(0.0023-0.011)	Sheppard & Funk (1925)
Wild rose *Rosa acicularis*	N.W. Territories Dist. from smelter (mi):				O'Toole et al. (1971)
" "	" " 0.4	leaf & stem	D	1.85	"
" "	" " 0.8	"	D	1.82	"
" "	" " 1.8	"	D	0.79	"
" "	" " 1.9	"	D	0.17	"
Eel grass *Zostera marina*	Adriatic Sea		W	0.093	Strohal et al. (1975)
Various plant species	Florida			0.0	Carrigan & Rogers (1940)
Wire grass	United States (salt-sick & healthy areas)			0.0	Russoff (1937)

Plant parts in children's insitutional diet			(0.209-0.693)	Murthy et al. (1971)
"Honey"	New York	W	(0.001-0.014)	Tong et al. (1975)

ANTIMONY IN ALGAE (1)

Species	Locality	Tissue	Analysis (2) PPM		Authority
Red alga *Ahnfeltia plicata*	Great Britain		D	0.080	Leatherland & Burton (1974)
Red alga *Chondrus crispus*	"		D	0.019	"
Brown alga *Cystoseira abrotanifolia*	Adriatic Sea		W	0.22	Strohal et al. (1975)
Kelp *Ecklonia maxima*	S.W. Africa		W	0.082±SD 0.028	Van As et al. (1975)
Brown alga *Fucus serratus*	Great Britain		D	0.047	Leatherland & Burton (1974)
Brown alga *Fucus versoides*	Adriatic Sea		W	0.14	Strohal et al. (1975)
Red alga *Gigartina rachula*	S.W. Africa		W	0.24	Van As et al. (1975)
Brown alga *Halidrys siliquosa*	Great Britain		D	0.060	Leatherland & Burton (1974)

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Brown alga *Laminaria digitata*	Great Britain		D	0.029	Leatherland & Burton (1974)
Brown alga *Laminaria hyperborea*		frond	D	0.09	Lunde (1970a)
Brown alga *Laminaria saccharina*	Great Britain		D	0.016	Leatherland & Burton (1974)
Red alga *Porphyra capensis*	S.W. Africa		W	0.21±SD 0.15	Van As et al. (1975)
Red ribbons *Suhria vittata*	"		W	0.23	"
Sea lettuce *Ulva lactuca*	Adriatic Sea		W	0.067	Strohal et al. (1975)
Sea lettuce *Ulva spp.*	S.W. Africa		W	0.16±SD 0.09	Van As et al. (1975)
Green algae	Germany, Dortmund		D	(0.1-1.2) 0.45	Payer et al. (1975)
" "	Bangkok, Thailand		D	(0.15-0.3) 0.22	"
Algae (marine)				0.8	Bowen (1966)
Algae	Danube R. Austria		D	(1.51-7.87) 4.3	Rehwoldt et al. (1975)

ARSENIC IN MAMMALS (1)

Species	Locality	Tissue	Analysis PPM (2)	Authority
Fin whale Balaenoptera physalis	Antarctica	blubber, oil	W 1.8	Lunde (1967)
" "	"	muscle, bone, blubber, oil	W 2.3	"
" "	"	muscle, oil	W 2.4	"
" "	"	muscle	D 0.36	" (1970)
" "	"	water soluble, muscle	D 0.9	"
Cow Bos bovis	United States	muscle	W 1.3	Schroeder & Balassa (1966)
" "	" "	milk, evap.	W 0.17	"
" "	" "	unsalted butter	W 0.23	"

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Cow *Bos bovis*		muscle		0.056	Kingsley et al. (1951)
" "	Montana	"	W	0.2	Lewis (1972)
" "	"	liver	W	0.05	"
" "	Washington, dairy cattle downwind from Cu smelter 10-13 mi	hair	W	(3.7-19.0) 8.9	Orheim et al. (1974)
" "	" " "	milk	W	(0.007-0.02) 0.013	"
" "	" " "	blood	W	(0.023-0.030) 0.0258	"
" "	" " 37 mi. (controls)	hair	W	(0.13-0.84)0.46	"
" "	" " "	milk	W	(0.003-0.01) 0.0025	"
" "	" " "	blood	W	(0.001-0.015) 0.0094	"
" "		20 X increase of As in hair & urine 2 X control			"
" "	Germany	Cattle died near Cu smelter			Bischoff & Haun (1939)
" "		calf, muscle	W	(0.005-0.1)	Barnard (1911)
" "			W	0.008	"
" "	Italy	"	W	0.52	Pezzeri (1970)
" "		calf liver	W	0.15	"
" "		liver	W	0.063	Orvini et al. (1974)

Cow *Bos bovis*		milk	W	(0.0005-0.07)	Barnard (1911)
" "	United States	muscle	W	(ND-0.1)0.02	Jelinek & Corneliussen (1977)
" "	"	liver	W	(ND-0.05)0.03	"
" "	"	milk	W	(ND-0.2)0.02	"
Northern fur seal *Callorhinus ursinus*	Pribilif Islands	kidney	W	<0.2	Anas (1974)
" "	"	liver	W	<0.2	"
Rock squirrel *Callospermophilus lateralis*	Utah	"	D	(0.1-9.4)	Sharma & Shupe (1975)
Guinea pig *Cavia porcellus*	Maryland	"	D	(0.06-0.21)	Furr et al. (1976)
" "	"	kidney	D	(0.01-0.04)	"
" "	"	muscle	D	(0.06-0.12)	"
" "	"	adrenal	D	(0.1-0.54)	"
" "	"	spleen	D	(0.02-0.25)	"
Common dolphin *Delphinus delphis*	New Zealand	liver	W	(0.13-0.8)	Koeman et al. (1972)
Opossum *Didelphis marsupialis virginiana*	Tennessee		D	0.2	Andren et al. (1973)
Horse *Equus caballus*	Montana	mane	D	(0.0-7.5)	Lewis (1972)
" "	" dist. from smelter 1.0 mi SSE		D	(2.1-7.5)4.2	"
" "	" " N 1.0 mi		D	(0.0-4.5)1.3	"
" "	" " E 2.9 mi		D	(0.0-4.4)0.34	"

Horse *Equus caballus*	Montana, dist. from smelter 5.3 mi. SE	mane	D	(0.0-2.3)0.2	Lewis (1972)
" "	" all other sites		D	0.0	"
" "	"	lung	W	0.7	"
" "	"	liver	W	0.1	"
" "	"	kidney	W	trace	"
" "	"	muscle	W	0.11	"
" "	"	mane	W	2.0	"
" "	Germany	Horses died near Cu smelter			Bischoff & Haun (1939)
Dusky dolphin *Lagenorhynchos obscurus*	New Zealand	liver	W	(0.13-0.8)	Koeman et al. (1972)
Woodchuck *Marmota monax*	United States	"	W	0.52	Schroeder & Balassa (1966)
Mouse *Mus musculus*	Laboratory	kidney	W	1.3	"
" "	"	spleen	W	5.6	"
" "	"	liver	W	0.0	"
White-tailed deer *Odocoileus virginiana*	Tennessee	19 deer killed from arsenic acid herbicide			Swiggart et al. (1972)
" "	"	liver		(14.7-24.3) 18.96	"
" "	"	kidney		(7.6-33.0) 17.78	"
" "	"	rumen contents		(18.0-31.8) 22.5	"

Rabbit *Oryctolagus cuniculus*	Switzerland	Feeding As produced local pigmentation in fur			Robert & Zurcher (1950)
" "	Russia (fed As)	muscle	W	(1.0-2.0)	Shtenberg (1938)
" "	"	liver	W	3.0	"
" "	"	kidney	W	3.0	"
" "		Rabbits 1 km from power plant had high accumulation of As in fur			Bencko (1970)
" "	Montana	muscle	W	0.6	Lewis (1972)
Sheep *Ovis aries*	New Zealand Fed 3 wks dry Elodea with 300 ppm As:	kidney	W	3.76	Lancaster et al. (1971)
" "	" " "	muscle	W	1.13	"
" "	" " "	liver	W	3.07	"
" "	" " "	wool	D	12.6	"
" "	" " "	hoof	D	2.21	"
" "	United States	muscle	W	0.35	Schroeder & Balassa (1966)
" "	Germany	Sheep died near Cu smelter			Bischoff & Haun (1939)
Common harbor seal *Phoca vitulina*	Great Britain	blood	W	0.08±0.03	Hamilton (1976)
" "	"	spleen	W	0.2±0.1	"
" "	"	heart	W	0.1±0.05	"
" "	"	muscle	W	0.3±0.1	"
" "	"	kidney	W	0.3±0.1	"

Common harbor seal *Phoca vitulina*	Great Britain	liver	W	0.2±0.09	Hamilton (1976)
Harbour porpoise *Phocoena phocoena*	North Sea	brain	W	(<0.01-0.16)	Koeman et al. (1972)
Whale *Physeter macrocephalus*	Antarctica	blubber, oil	W	0.6	Lunde (1967)
Rat *Rattus rattus*	United States	kidney	W	0.0	Schroeder & Balassa (1966)
" "	" "	liver	W	(0.0-0.52)	"
" "	" "	brain	W	(0.0-0.44)	"
Squirrel *Sciurus sp.*	Tennessee		D	0.8	Andren et al. (1973)
Surinam dolphin *Sotalia guianensis*	Surinam	liver	W	(0.15-0.19)	Koeman et al. (1972)
Pig *Sus scrofa*	United States	muscle	W	0.06	Schroeder & Balassa (1966)
" "	" "	liver	W	(1.07-1.4)	"
" "	" "	kidney	W	0.0	"
" "	" "	muscle	W	(ND-0.1)0.02	Jelinek & Corneliussen (1977)
" "	" "	liver	W	(ND-0.05)0.02	"
" "	Italy	muscle	W	(0.22-0.32)	Barela & Pezzeri (1966)
" "		"	W	0.02	Ledet et al. (1973)

Pig *Sus scrofa*	Michigan Fed arsanilic acid (clinical signs)	liver		5.0	Vorhies et al. (1969)
" "	Fed high to low amts. of H_2O	"		(0.02-3.3)	"
" "	control	"		0.6	"
Bottle-nosed dolphin *Tursiops truncatus*	From dolphinarium, fed North Sea fish	"	W	(0.13-0.8)	Koeman et al. (1972)
Fox *Vulpes sp.*	United States (wild)	kidney	W	0.39	Schroeder & Balassa (1966)
" "	"	heart	W	0.25	"
" "	"	lung	W	0.69	"
" "	Tennessee		D	0.8	Andren et al. (1973)
Whale	Antarctica	blubber, oil	W	(2.2-2.8)	Lunde (1967)
"	"	muscle	W	0.36	" (1970)

TABLE ARSENIC IN BIRDS (1)

Species	Locality	Tissue	Analysis (2) PPM	Authority
Mallard duck *Anas platyrhynchos*	Canada	feather	D (0.1-0.2) 0.5	Kelsall (1970)
" "	New York	liver	W <0.4	Baker et al. (1976)
" "	"	muscle	W <0.4	"
Black duck *Anas rubripes*	Canada	feather	D (0.1-0.2) 0.17	Kelsall (1970)
" "	New York	liver	W <0.4	Baker et al. (1976)
" "	"	muscle	W <0.4	"
White-fronted goose *Anser albifrons*	Canada	feather	D (0.2-0.5) 0.38	Kelsall (1970)
Lesser scaup *Aythya affinis*	"	"	D (0.1-0.2)0.15	"
Greater scaup *Aythya marila nearctica*	New York	liver	W <0.4	Baker et al. (1976)
" " "	"	muscle	W <0.4	"
" " "	"	brain	W <0.4	"

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(2) W, D or A indicates on a Wet, Dry or Ashed basis. A single number indicates a single determination or mean. (x-y) indicates range of values, followed by the mean. ± Standard deviation (SD), standard error (SE), median, and geometric mean are indicated as reported. pCi/g = picocuries per gram.

Canvasback *Aythya valisineria*	New York	liver	W	<0.4	Baker et al. (1976)
" "	"	muscle	W	<0.4	"
" "	"	brain	W	<0.4	"
Canada goose *Branta canadensis*	"	liver	W	<0.4	"
" "	"	muscle	W	<0.4	"
" "	"	brain	W	<0.4	"
Cattle egret *Bubulcus ibis*	S. Florida	egg	W	(<0.07-0.3)	Ogden et al. (1974)
Bufflehead *Bucephala albeola*	New York	liver	W	<0.4	Baker et al. (1976)
" "	"	muscle	W	<0.4	"
Red-shouldered hawk *Buteo lineatus*	S. Florida	muscle & brain	W	0.15	Ogden et al. (1974)
Common egret *Casmerodius albus*	"	egg	W	<0.10	"
Crow *Corvus brachyrhynchos*	Tennessee		D	0.1	Andren et al. (1973)
White ibis *Eudocimus albus*	S. Florida	"	W	(<0.1-0.24)	Ogden et al. (1974)
" "	"	muscle	W	1.76	"
Chicken *Gallus domesticus*	United States	"	W	0.0	Schroeder & Balassa (1966)
" "	United Kingdom	As overdose, liver		(6.0-12.0)	Baker & Parker (1969)

Chicken *Gallus domesticus*		egg		0.013	Kingsley & Schaffert (1951)
" "	Portugal	muscle	W	0.02	Costa et al. (1970)
" "	"	kidney	W	0.05	"
" "	"	liver	W	⩽2.2	"
" "	"	bone marrow	W	(0.0-0.4)	"
" "		kidney	W	0.02	George et al. (1973)
" "		liver	W	0.02	"
" "	Great Britain	muscle	W	0.02	Baron (1969)
" "	"	kidney	W	0.05	"
" "	"	liver	W	0.08	"
" "	"	egg yolk	W	0.005	Barnard (1911)
" "	United States	muscle	W	(ND-0.5) 0.08	Jelinek & Corneliussen (1977)
" "	"	liver	W	(ND-0.4)0.08	"
" "	"	egg	W	(ND-0.2)0.03	"
White-singed scoter *Melanitta deglandi*	New York	liver	W	<0.4	Baker et al. (1976)
" "	"	muscle	W	<0.4	"
Turkey *Meleagris gallopavo*		liver	W	0.04	Frost et al. (1955)
" "		muscle	W	0.03	"

Osprey Pandion haliaetus	S. Florida	egg	W	<0.10	Ogden et al. (1974)
Brown pelican Pelecanus occidentalis	"	"	W	<0.10	"
" "	South Carolina	"	W	(0.076-0.85) 0.31	Blus et al. (1977)
" "	Florida	"	W	(0.07-0.18)0.10	"
" "	"	liver	W	(0.47-0.89)	"
" "	South Carolina	"	W	(0.29-1.02)	"
" "	Georgia	"	W	0.23	"
Double-breasted cormorant Phalacrocorax auritus	S. Florida	egg	W	<0.10	Ogden et al. (1974)
Starling Sturnus vulgaris	United States (1971)	whole body except beak, foot, & wing	W	(0.01-0.04)	Martin & Nickerson (1973)
" "	Lansing, Michigan (1971)	"	W	0.21	"
" "	United States (urban, 1973)	"	W	(<0.05-1.40) 0.171 ± SE 0.063 geom. mean 0.085	White et al. (1977)
" "	United States (rural, 1973)	"	W	(<0.05-0.52) 0.139 ± SE 0.024 geom. mean 0.057	"
" "	As in starlings showed 88% increase in 1973 over 1971				"
Goose		down	W	1.2	(1902) in Vinogradov (1953)
Peacock		feather	W	2.5	"

Sparrow	Tennessee	D 0.2	Andren et al. (1973)
Hawk	"	D 0.4	"
Owl	"	D 0.05	"

ARSENIC IN REPTILES AND AMPHIBIA (1)

Species	Locality	Tissue	Analysis (2) PPM		Authority
REPTILES					
Alligator *Alligator mississipiensis*	S. Florida	egg	W	(0.05-0.2)	Ogden et al. (1974)
Crocodile *Crocodylus acutus*	"	"	W	(0.06-0.08)	"
AMPHIBIA					
Toad *Bombina variegata*	Yugoslavia Idrija Hg mine	liver	W	(0.035-0.048)	Byrne et al. (1975)
" "	Poljane	"	W	(0.036-0.039)	"
Toad *Bufo bufo*	Yugoslavia Dolenjska	"	W	0.021	"
" "	Idrija Hg mine	"	W	0.038	"

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Frog Rana esculenta	Yugoslavia Macedonia	liver	W	(0.078-0.444)	Byrne et al. (1975)
" "	"	thyroid gland	W	1.0	"
" "	Rab	liver	W	(0.107-0.183)	"
Leopard frog Rana pipiens	S. Florida	whole	W	0.07	Ogden et al. (1974)
Frog Rana temporaria	Yugoslavia Ljubljana	liver	W	0.047	Byrne et al. (1975)
" "	Idrija Hg mine	"	W	0.195	"

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ARSENIC IN MARINE FISH (1)

Species	Locality	Tissue	Analysis (2) PPM	Authority
Sturgeon Acipenser güldenstädti	Caspian Sea		W 1.31	Shtenberg (1939)
" "	"		D 5.02	"
" "	Sea of Azov		W 1.39	"
" "	"		D 5.96	"
Sturgeon Acipenser sp.	New York		W (0.08-0.44)	Pakkala et al. (1972)
" "	Russia	egg	W 3.8	Chapman (1926)
Sturgeon Acipenser stellatus	Caspain Sea		W 1.1	Shtenberg (1939)
" "	"		D 5.27	"
" "	Sea of Azov		W 1.45	"
" "	"		D 6.3	"

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(2) W, D or A indicates on a Wet, Dry or Ashed basis. A single number indicates a single determination or mean. (x-y) indicates range of values, followed by the mean. ± Standard deviation (SD), standard error (SE), median, and geometric mean are indicated as reported. pCi/g = picocuries per gram.

Spotted wolffish *Anarchichas minor*	Barents Sea		W	2.7	Shtenberg (1939)
" "	"		D	14.3	"
" "	W. Greenland	muscle	D	(17.0-195.0) 78.3	Bohn (1975)
" "	"	liver	D	(19.3-55.9) 40.1	"
Bay anchovy *Anchoa mitchelli*	N.W. Atlantic	whole	D	2.1	Windom et al. (1973b)
" "	Norway		W	(7.1-10.7)	Lunde (1973)
Blue hake *Antimora rostrata*	Mid Atlantic Bight	muscle	W	21.0	Greig et al. (1976)
" "	"	liver	W	4.8	"
Barred cardinal fish *Apogon sp.*	Grand Bahamas Island	whole		5.03	Taylor & Bright (1973)
Sea catfish *Arius felis* (=Galeichthys felis)	S. Florida		W	(3.12-7.47)	Ogden et al. (1974)
Aspius aspius	Norway	muscle oil	W	0.9	Lunde (1967)
Catfish *Bagre marinus*	N. Atlantic		D	<1.0	Windom et al. (1973b)
Lanternfish *Bolinichthys indicus*	Bermuda	midsection	D	<1.0	Gibbs et al. (1974)
Turbot *Bothina sp.*	Great Britain	muscle	W	(0.6-1.8)	Cox (1925)
Menhaden (Machete) *Brevoortia maculata*	Peru	"		(0.16-0.5) 0.33	Echegaray (1974)

Menhaden _Brevoortia tyrannus_	North America	oil	W	15.5	(1925) in Vinogradov (1953)
Cusk _Brosme brosme_	Norway	liver oil	W	1.8	Lunde (1967)
Porgy _Calamus brachysomus_	Peru	muscle		1.12	Echegaray (1974)
Crevalle jack _Caranx hippos_	S. Florida	whole	W	(0.5-0.55)	Ogden et al. (1974)
Black sea bass _Centropristes striatus_	N.W. Atlantic	muscle	D	6.4	Windom et al. (1973b)
Lanternfish _Ceratoscopelus warmingi_	Bermuda	midsection	D	(<1.0-1.0)	Gibbs et al. (1974)
" "	N. Atlantic		D	<1.0	Windom et al. (1973b)
Atlantic herring _Clupea harengus_	Norway	lipid	W	(3.1-20.2)	Lunde (1973)
" "	"	meal	D	(2.7-6.9)	"
" "	"	muscle	D	3.8	" (1970)
" "	"	bone	D	1.9	"
" "	"	skin	D	7.2	"
" "	Sweden	muscle	W	(0.16-4.8)	Ljunggren et al. (1971)
" "	Great Britain		W	(0.4-0.8)	Cox (1925)
" "	Sweden	muscle	W	(0.1-0.3)	"
" "	Caspian Sea	"	W	1.5	"
" "	Nova Scotia	"	W	1.4	Reinke et al. (1975)

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Atlantic herring *Clupea harengus*	Denmark		W	2.0	Sadolin (1928)
" "	Sweden	muscle	W	0.2	Shtenberg (1939)
" "	"		D	3.9	"
" "	Norway	water soluble	D	(5.2-21.6)	Lunde (1969)
" "	W. Norway		D	4.2	" (1973)
Eel *Conger sp.*	N.W. Atlantic	muscle	D	<1.0	Windom et al. (1973b)
Wrasse *Ctenolabrus rupestris*	Sweden		D	12.0	Noddack & Noddack (1940)
Spotted trout *Cynoscion nebulosus*	N.W. Atlantic	muscle	D	2.5	Windom et al. (1973b)
Round seal *Decapterus punctatus*	"	"	D	1.8	"
Lanternfish *Diaphus dumerili*	N.W. Africa	whole	D	2.7	Leatherland et al. (1973)
Lanternfish *Diaphus mollis*	Bermuda	midsection	D	<1.0	Gibbs et al. (1974)
" "	N.W. Atlantic	muscle	D	<1.0	Windom et al. (1973b)
Pejerrey *Dontesthes regia*	Peru	"		(0.30-0.52) 0.33	Echegaray (1974)
Drepanopsetta platessoides	Barents Sea		W	2.5	Shtenberg (1939)
" "	"		D	12.3	"

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Moray eel __Enchelycore sp.__	Bahama Islands	whole		4.79	Taylor & Bright (1973)
Grouper, Rock hind __Epinephelus adscensionis__	"	muscle		(0.21-0.54)	"
Red hind __Epinephalus guttatus__	"	"		(0.41-2.48)	"
Nassau grouper __Epinephalus striatus__	"	"		(1.62-13.65) 9.9±SD 4.89	"
" "	"	liver		(6.58-15.94) 9.79±SD 4.86	"
" "	"	kidney		(3.45-8.80)	"
" "	"	heart		(4.10-5.95)	"
Priest shark __Etmopterus spinax__	N.W. Africa	liver	D	(1.2-1.3)	Leatherland et al. (1973)
Damselfish __Eupomacentrus partitus__	Bahama Islands	whole		3.96	Taylor & Bright (1973)
Little tunney __Euthynnus alleteratus__	N.W. Atlantic	muscle	D	1.1	Windom et al. (1973b)
Squirrelfish __Flammeo marianus__	Bahama Islands	whole		(0.75-1.36)	Taylor & Bright (1973)
Rock cod __Gadus callarius__	Barents Sea		W	3.8	(1939) in Vinogradov (1953)
" "	"		D	18.0	"
" "	Great Britain	muscle	D	4.8	Leatherland & Burton (1974)

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Norway pout *Gadus esmarki*	Norway	oil	W	3.2	Lunde (1967)
Gadus macrocephalus			W	11.8	(1935) in Vinogradov (1953)
" "			W	6.5	"
Atlantic cod *Gadus morhua*	Norway	muscle	D	2.2	Lunde (1970)
" "	"	bone	D	0.9	"
" "	"	liver	D	9.8	"
" "	"	skin	D	3.5	"
" "	Sweden	muscle	W	(0.26-11.0)	Ljunggren et al. (1971)
" "	"	"	W	(0.2-0.4)	Cox (1925)
" "	Norway	oil, liver	W	(0.8-26.0)	Lunde (1967)
" "	Great Britain	muscle	W	(0.8-2.0)	Cox (1925)
" "	Sweden	"	W	0.4	(1926) in Vinogradov (1953)
" "			W	(1.0-3.3)	(1933) in Vinogradov (1953)
" "			W	13.0	(1928) in Vinogradov (1953)
" "		liver	W	20.0	"
" "		muscle	W	6.0	"
" "		meal	W	15.5	(1929) in Vinogradov (1953)
" "		fat	D	0.7	"
" "	Sweden (1919)			(0.5-4.1)	Bang (1919)

Atlantic cod __Gadus morhua__	Gulf of Bothnia	muscle		(0.26-0.49)	Westermark (1969)
" "	"	liver		(3.4-4.2)	"
" "	Norway		D	(3.69-24.3)	Lunde (1973)
" "	Denmark	muscle	D	(0.4-0.8)	Sadolin (1928)
" "	"	liver	W	(0.7-3.2)	"
" "	Newfoundland	muscle	W	(0.4-1.5) 0.8±SD 0.61	Kennedy (1976)
" "	New Brunswick	"	D	(0.4-1.5)	Penrose et al. (1975)
" "	N.W. Atlantic	"	W	(1.2-7.4) 3.5±SD 1.7	Zook et al. (1976)
" "	Iceland	"	W	(0.3-1.6) 0.8±SD 0.4	"
__Gadus navaga__	Indiga River		W	2.4	Shtenberg (1939)
" "	"		D	11.8	"
Greenland cod __Gadus ogac__	W. Greenland	muscle	D	(23.9-152.0) 62.5	Bohn (1975)
" "	"	liver	D	(7.6-46.3)21.9	"
Cod __Gadus sp.__		muscle		540.0 (max.)	Robertson et al. (1972) (cited in Bohn (1975))
" "		liver		(3.4-4.2)	Westermark (1969)
" "		muscle		(0.26-0.49)	"
" "		" age 6		0.26	"

Cod *Gadus sp.*		muscle, age 8-10		0.47	Westermark (1969)
" "		" age 10		0.49	"
Yuyo *Gigartina chamissoi*	Peru	muscle		1.22	Echegaray (1974)
Fairy basslet *Gramma loreto*	Bahama Islands	whole		(1.51-2.33)	Taylor & Bright (1973)
Wrasse *Halichoeres dispilus*	Peru	muscle		1.19	Echegaray (1974)
Greenling *Hexagrammos sp.*	W. Canada	"	W	(<0.4-0.8)	LeBlanc & Jackson (1973)
Cow shark *Hexanchus griseus*	"	"	W	(<0.4-5.9)3.5	LeBlanc & Jackson (1973)
Halibut *Hippoglossus hippoglossus*	Norway	liver, oil	W	5.3	Lunde (1967)
" "	Great Britain	muscle	W	0.3	(1926) in Vinogradov (1953)
" "	"	"	W	(0.0-0.3)	Cox (1925)
" "	Nova Scotia	"	W	1.8	Reinke et al. (1975)
American plaice *Hippoglossoides platessoides*	New Brunswick	"	D	(1.4-11.7)	Penrose et al. (1975)
" "	Newfoundland	"	W	(1.4-11.7) 4.4±SD 3.0	Kennedy (1976)
Pacific halibut *Hippoglossus stenolepis*	Gulf of Alaska	"	W	(0.8-3.9) 1.8±SD 1.0	Zook et al. (1976)

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Longspine squirrelfish *Holocentrus rufus*	Bahama Islands	whole		(4.87-6.12)	Taylor & Bright (1973)
Huso huso	Sea of Azof		W	1.41	(1939) in Vinogradov (1953)
" "	"		D	6.19	"
Ratfish *Hydrolagus colliei*	W. Canada	muscle	W	(0.4-10.3)10.2	LeBlanc & Jackson (1973)
Lanternfish *Hygophum hygomi*	Bermuda	midsection	D	<1.0	Gibbs et al. (1974)
" "	(1914 in alcohol)		D	1.3?	"
" "	(1885 in alcohol)		D	7.9?	"
" "	N.W. Atlantic	muscle	D	<0.1	Windom et al. (1973b)
Lanternfish *Hygophum macrochir*	N.W. Africa	whole	D	2.5	Leatherland et al. (1973)
Barred hamlet *Hypoplectrus puella*	Bahama Islands	"		8.56	Taylor & Bright (1973)
Pinfish *Lagodon rhomboides*	S. Florida	whole	W	(2.05-3.52)	Ogden et al. (1974)
Lanternfish *Lampanyctus photonotus*	Bermuda	midsection	D	<1.0	Gibbs et al. (1974)
Lanternfish *Lampanyctus pusillus*	"	"	D	<1.0	"
" "	N.W. Atlantic	muscle	D	1.0	Windom et al. (1973b)

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Lepidophanes indicus	N.W. Atlantic	muscle	D	<1.0	Windom et al. (1973b)
Yellowtail flounder *Limanda ferruginea*	"	"	W	(2.1-10.3) 4.5±SD 3.0	Zook et al. (1976)
Lanternfish *Lobianchia dofleini*	Bermuda	midsection	D	<2.0	Gibbs et al. (1974)
" "	N.W. Atlantic	muscle	D	<1.0	Windom et al. (1973b)
Red snapper *Lutjanus campechanus*	Gulf of Mexico	"	W	(0.2-1.0) 0.4±SD 0.1	Zook et al. (1976)
Gray snapper *Lutjanus griseus*	S. Florida	whole	W	(1.4-2.23)	Ogden et al. (1974)
Black marlin *Makaira indica*	N.E. Australia	muscle	W	(0.1-1.65) 0.6±SE 0.054	Mackay et al. (1973)
" "	"	liver	W	(0.1-2.75)1.0 ±SE 0.083	"
Blue marlin *Makaira nigricans*	Japan	muscle	W	(0.1-0.2) 0.77± 0.43	Nishigaki et al. (1974)
Capelin *Mallotus villosus*	Norway	oil	W	13.2	Lunde (1967)
" "	"	water-soluble	W	7.9	" (1969)
" "	"		D	6.1	" (1973)
Haddock *Melanogrammus aeglefinus* (=Gadus aeglefinus)	Great Britain		W	(0.1-0.6)	Cox (1925)
" "	Sweden		W	(0.1-0.2)	"
" "	"			10.3	Lunde (1973)

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Haddock *Melanogrammus aeglefinus* (=*Gadus aeglefinus*)	Barents Sea		W	3.4	(1933) in Vinogradov (1953)
" "	"		W	2.87	(1939) in Vinogradov (1953)
" "	"		D	15.6	"
" "	United States	muscle	W	2.17	Schroeder & Balassa (1966)
" "	N.W. Atlantic	"	W	(1.8-9.5) 6.6±SE 2.8	Zook et al. (1976)
" "	Norway		D	10.8	Lunde (1973)
" "	Nova Scotia	muscle	W	10.0	Reinke et al. (1975)
" "	Washington		D	(5.4-10.8)	Cardiff (1937)
Whiting *Menticirrhus saxatilis*	Great Britain	muscle	W	(0.1-3.3)	Cox (1925)
" "	"		W	(0.1-3.3)	Chapman (1926)
Silver hake, whiting *Merluccius bilinearis*	N.W. Atlantic	"	W	(2.3-5.4) 3.7±SD 0.9	Zook et et al. (1976)
European hake *Merluccius merluccius*	Great Britain	"	W	0.3	Chapman (1926)
" "	"	"	W	(0.2-0.3)	Cox (1925)
Merluza *Merluccius peruanus*	Peru	"		(0.05-0.3) 0.18	Echegaray (1974)
Pacific hake *Merluccius productus*	N.W. Atlantic	"	W	(0.2-1.0) 0.6±SD 0.2	Zook et al. (1976)

Dover sole *Microstomus pacificus*	S. California (contam. area)	muscle	W	4.12±SE 0.62	Fowler et al. (1975)
" "	" (uncontam. area)	"	W	2.43±SE 0.37	"
" "	S. California	"	W	(1.3-3.1)	DeGoeij et al. (1974)
Planehead filefish *Monocanthus hispidus* (=Stephanolepsis hispidus)	Mid. Atlantic Bight	whole	W	1.5	Greig et al. (1976)
Bass *Morone labrax*	Great Britain	muscle	D	7.1	Leatherland & Burton (1974)
Striped bass *Morone saxatilis*	N.W. Atlantic	"	D	1.8	Windom et al. (1973b)
Striped mullet *Mugil cephalus*	Peru	"		(0.68-1.33) 1.02	Echegaray (1974)
" "	S. Florida		W	(1.22-2.51)	Ogden et al. (1974)
" "	N.W. Atlantic	"	D	<1.0	Windom et al. (1973b)
" "	United States	whole	W	(0.02-0.75)	Walsh et al. (1977)
Tollo shark *Mustelus sp.*	Peru	muscle		(0.6-0.96) 0.75	Echegaray (1974)
Grouper *Mycteroperca bonaci*	Bahama Islands	"		(0.1-0.17)	Taylor & Bright (1973)
Scamp *Mycteroperca phenax*	"	"		(0.10-3.82)	"
Tiger grouper *Mycteroperca tigris*	"	"		(1.0-3.04)	"
" "	"	liver		(0.55-1.16)	"

Yellowfin grouper *Mycteroperca venenosa*	Bahama Islands	muscle		(0.14-2.38)	Taylor & Bright (1973)
Shorthorn sculpin *Myoxocephalus scorpius*	W. Greenland	"	D	(19.3-72.3) 43.4	Bohn (1975)
" "	"	liver	D	(20.1-126.0) 57.9	"
Nematonurus armatus	Mid. Atlantic Bight	muscle	W	(10.0-20.0)	Greig et al. (1976)
" "	"	liver	W	10.4	"
Yellowfin tuna *Neothunnus macropterus*	Japan	muscle	W	(0.5-1.4) 0.98±0.29	Nishigaki et al. (1974)
Lanternfish *Notoscopelus caudispinosus*	Bermuda	midsection	D	<1.0	Gibbs et al. (1974)
" "	N.W. Atlantic	muscle	D	<1.0	Windom et al. (1973b)
Pejerrey *Odontesthes regia*	Peru	"		(0.3-0.52) 0.33	Echegaray (1974)
Lingcod *Ophiodon elongatus*	W. Canada	"	W	0.3	LeBlanc & Jackson (1973)
Shrimp eel *Ophichthus gomesi*	N.W. Atlantic	"	D	1.0	Windom et al. (1973b)
Palespotted eel *Ophichthus ocellatus*	"	"	D	1.0	"
Yellowhead jawfish *Opistagnathus macrognathus*	Bahama Islands	whole		4.47	Taylor & Bright (1973)

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Sand bass (Cabrilla) Paralabrax humeralis	Peru	muscle		(0.63-0.74) 0.69	Echegaray (1974)
Flounder (Lenguado) Paralichthys adspersus	"	"		(0.31-0.4) 0.35	"
Flounder Paralichthys lethostigma	N.W. Atlantic	"	D	<1.0	Windom et al. (1973b)
Flounder Paralichthys sp.	Nova Scotia	"	W	1.8	Reinke et al. (1975)
Corvina Paralonchurus peruanus	Peru	"		2.0	Echegaray (1974)
English sole Parophrys vetulus	W. Canada	"	W	(0.6-11.5)1.1	LeBlanc & Jackson (1973)
Flounder Pleuronectes flesus (=Platichthys flesus)	Sweden	"	W	(0.58-7.40)	Ljunggren et al. (1971)
" "	Skagerrak Norway	"	W	(1.24-7.4)3.54	"
" "	Baltic Sea Norway	"	W	(0.58-0.79)0.685	"
" "	Great Britain	"	D	8.7	Leatherland & Burton (1974)
Plaice Pleuronectes platessa	Sweden	"	W	(0.5-0.9)	(1926) in Vinogradov
" "	Great Britain	"	W	(1.4-3.0)	"
" "	Norway	oil, liver	W	(1.0-4.0)	Lunde (1967)
" "	"	oil, tissue	W	(2.0-2.2)	"
" "	"	oil	W	6.1	" (1972)

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Plaice *Pleuronectes platessa*	Baltic Sea	muscle	W	(0.84-5.7)	Ljunggren et al. (1971)
" "	Japanese Sea		W	1.25	Shtenberg (1939)
" "			W	(6.0-10.0)	(1926) in Vinogradov (1953)
" "	Sweden		W	(0.3-0.9)0.5	Cox (1925)
" "	Great Britain		W	(0.8-3.0)1.7	"
Mackerel *Pneumatophorus japonicus*	Japan	muscle	D	0.015	Fukai & Meinke (1962)
Pollock, coal fish *Pollachius virens*	Norway		W	7.2	Lunde (1973)
" "	"	liver oil	W	3.2	Lunde (1967)
" "	N.W. Atlantic	muscle	W	(1.1-4.7) 2.4±SD 1.1	Zook et al. (1976)
Sand sole *Psettichthys melanostictus*	W. Canada	"	W	(0.6-11.5)1.1	LeBlanc & Jackson (1973)
Skate *Raja sp.*	"	"	W	16.2	"
Greenland halibut *Reinhardtius hippoglossoides*	W. Greenland	"	D	(14.7-307.0) 69.8	Bohn (1975)
" "	"	liver	D	(23.7-228.0)93.9	"
" "	Newfoundland	muscle	W	(0.2-1.5) 0.8±SD 0.48	Kennedy (1976)
Pacific bonito *Sarda chilensis*	Peru	"		0.12	Echegaray (1974)
Corvina *Sciaena gilberti*	"	"		(0.07-0.8)0.34	"

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Atlantic mackerel *Scomber scombrus*	Norway	muscle	W	(3.0-3.5)	Lunde (1970)
" "	"	liver oil	W	5.0	" (1967)
" "	"	oil, muscle	D	(4.2-7.3)	"
" "	"	water soluble, muscle	W	3.1	" (1969)
" "	"		D	(4.7-9.2)	" (1973)
" "	Great Britain	muscle	W	(0.2-0.5)	Cox (1925)
" "	Sweden	"	W	0.1	"
" "			W	(0.025-0.04)	(1904) in Vinogradov (1953)
" "	Nova Scotia	"	W	1.5	Reinke et al. (1975)
" "	Great Britain	"	D	9.2	Leatherland & Burton (1974)
" "	"	"	D	2.2	"
Spanish mackerel *Scomberomorus maculatus*	N. W. Atlantic	"	D	1.8	Windom et al. (1973)
" "	"	liver	D	2.7	"
Atlantic saury *Scomberesox saurus*	S.W. Africa	muscle	D	5.4	Leatherland et al. (1973)
" "	"	heart	D	6.6	"
" "	"	liver	D	8.4	"
Windowpane flounder *Scophthalmus aquosus*	Long Island	muscle	W	2.7	Greig et al. (1977b)
" "	New York Bight	"	W	(1.4-2.8)	"

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Windowpane flounder *Scophthalmus aquosus*	Delaware	muscle	W	1.8±SE 0.3	Greig et al. (1977b)
" "	Chincoteague	"	W	2.0	"
Rousette *Scyllium caniculata*	Atlantic		D	0.13	(1903) in Vinogradov (1953)
Sea perch, Norway haddock *Sebastes marinus*	Barents Sea		W	2.7	(1939) in Vinogradov (1953)
" "	"		D	13.0	"
" "	Great Britain	muscle	W	0.8	Cox (1925)
" "	Norway	liver oil	W	4.3	Lunde (1967)
" "	"	muscle	D	3.3	" (1970)
" "	Newfoundland	"	W	(0.4-1.4) 0.8±SD 0.36	Kennedy (1976)
" "	Nova Scotia	"	W	(0.7-3.2) 1.3±SD 0.8	Zook et al. (1976)
Sea perch *Sebastes sp.*	W. Canada	"	W	(<0.3-2.6)0.3	LeBlanc & Jackson (1973)
Amberjack *Seriola sp.*	Mid. Atlantic Bight	"	W	1.2	Greig et al. (1976)
Cojinova *Seriolela violacea*	Peru	"		0.72	Echegaray (1974)
Comber *Serranus atricauda*	Atlantic		D	0.05	(1903) in Vinogradov (1953)
" "	"	"	D	0.06	"
" "	"	scale	D	0.05	"

Sole Solea solea	Great Britain		W	5.2	Chapman (1926)
Sole Solea sp.	Sweden	muscle	W	(0.1-0.2)	Cox (1925)
" "	Great Britain	"	W	0.3	"
" "			W	7.0	"
Sprat Sprattus sprattus	Sweden		W	(0.8-1.72)	Ljunggren et al. (1971)
Spiny dogshark Squalus acanthias	"	without viscera	W	6.0	Noddack & Noddack (1940)
" "	N.W. Atlantic		D	10.0	Windom et al. (1973b)
" "	W. Canada	muscle	W	(1.5-5.6) 3.8	LeBlanc & Jackson (1973)
" "	Italy		W	0.53	Barela & Pezzeri (1966)
Synaphobranchus kaupi	Mid Atlantic Bight	whole	W	8.0	Greig et al. (1976)
Cunner Tautogolabrus adspersus	Newfoundland	muscle	D	0.6±SD 0.9	Penrose et al. (1975)
" "	New Brunswick	"	D	(0.0-1.5)	"
Striped marlin Tetrapterus audax	Japan	"	W	(0.1-1.5) 1.10±0.15	Nishigaki et al. (1974)
Albacore, germon Thunnus alalunga	"	"	W	(0.7-1.4) 0.91±0.22	"

Albacore, germon *Thunnus alalunga*	Atlantic Ocean		D	0.15	(1903) in Vinogradov (1953)
Bigeye tuna *Thunnus obesus*	Japan	muscle	W	(0.3-1.9) 0.91±0.41	Nishigaki et al. (1974)
Tunny, bluefin tuna *Thunnus thynnus*	Norway		D	9.6	Lunde (1973)
Tinca tinca			W	0.4	(1924) in Vinogradov (1953)
Scad *Trachurus symmetricus murphyi*	Peru	muscle		(0.19-0.77)0.4	Echegaray (1974)
Rouget, sea robin *Trigla pini*	Atlantic		D	0.15	(1903) in Vinogradov (1953)
" "	"	muscle	D	0.045	"
" "	"		D	0.15	"
Swordfish *Xiphias gladius*	Peru	"		(0.35-1.32) 0.72	Echegaray (1974)
" "	Japan	"	W	(0.2-1.6) 0.61±0.36	Nishigaki et al.(1974)
Zeus sp.	Great Britain		W	<0.1	(1925) in Vinogradov (1953)
Kingfish	United States		W	8.86	Schroeder & Balassa (1966)
Blenny	Newfoundland	muscle	D	(0.4-0.8)	Penrose et al. (1975)

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ARSENIC IN FRESHWATER FISH (1)

Species	Locality	Tissue	Analysis (2) PPM	Authority
Alewife *Alosa pseudoharengus*	Lake Michigan	whole	W 0.023	Lucas et al. (1970)
" "	Wisconsin	muscle	W 0.0	Kleinert et al. (1974)
Rock bass *Ambloplites rupestris*	New York		W (0.03-0.18)	Pakkala et al. (1972)
" "	Wisconsin	muscle	W (0.10-0.12)	Kleinert et al. (1974)
" "	United States	whole	W (<0.05-0.21)	Walsh et al. (1972)
Catfish *Ameiurus melas*	"		W 0.225	Ellis et al. (1941)
" "	"		D 1.06	"

(1) Blank spaces indicate information not available or not applicable. ? indicates questionable data.

(2) W, D or A indicates on a Wet, Dry or Ashed basis. A single number indicates a single determination or mean. (x-y) indicates range of values, followed by the mean. ± Standard deviation (SD), standard error (SE), median, and geometric mean are indicated as reported. pCi/g = picocuries per gram.

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Bowfin *Amia calva*	Wisconsin	muscle	W	0.0	Kleinert et al. (1974)
" "	New York	"	W	0.04	Pakkala et al. (1972)
" "	United States	whole	W	(0.20-0.22)	Walsh et al. (1977)
European eel *Anguilla anguilla*			W	1.6	(1933) in Vinogradov (1953)
" "			W	0.12	(1928) in Vinogradov (1953)
" "	Great Britain	muscle	D	1.7	Leatherland & Burton (1974)
" "	Norway	oil, liver	W	8.9	Lunde (1967)
" "	"	oil, tissue	W	0.5	"
" "		liver		0.6	in Vinogradov (1953)
American eel *Anguilla rostrata*	N.W. Atlantic	muscle	W	1.0	Windom et al. (1973b)
Freshwater drum, sheephead *Aplodinotus grunniens*	Wisconsin	"	W	0.0	Kleinert et al. (1974)
" "	Lake Erie	"	W	(0.09-0.12)	Willford (1971)
" "	New York	"	W	(0.04-0.18)	Pakkala et al. (1972)
" "	United States		W	0.09	Pillay et al. (1974)
" "	"	whole	W	(0.05-0.16)	Walsh et al. (1974)

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Atlantic pomfret *Brama brama* (=Abramis brama)	Norway		W	0.3	Lunde (1967)
" "	Lake Pskov		W	2.2	(1939) in Vinogradov (1953)
" "			D	12.9	"
" "	Don River		W	2.38	"
" "			D	11.4	"
" "	Volga River		W	1.21	"
" "	Great Britain		W	0.4	(1924) in Vinogradov (1953)
Goldfish *Carassius auratus*	Lake Erie	liver	W	0.006	Lucas et al. (1970)
" "	Wisconsin	muscle	W	0.10	Kleinert et al. (1974)
" "	New York	"	W	(0.04-0.06)	Pakkala et al. (1972)
" "	United States	whole	W	(0.06-0.21)	Walsh et al. (1977)
River carpsucker *Carpiodes carpio*	"	"	W	(0.05-0.28)	"
Quillback *Carpiodes cyprinus*	Wisconsin	muscle	W	0.0	Kleinert et al. (1974)
Longnose sucker *Catostomus catostomus*	United States	whole	W	(0.06-0.17)	Walsh et al. (1977)
Bridgelip sucker *Catostomus columbianus*	"	"	W	(0.06-0.27)	"
White sucker *Catostomus commersoni*	New York	muscle	W	(0.03-0.13)	Pakkala et al. (1972)

White sucker Catostomus commersoni	United States	whole	W	(<0.05-0.16)	Walsh et al. (1977)
" "	Lake Erie	muscle	W	(0.09-0.12)	Willford (1971)
" "			W	0.11	Pillay et al. (1974)
Catostomidae	United States		D	0.93	Ellis et al. (1941)
Flannelmouth sucker Catostomus latipinnis	"	whole	W	(0.08-0.26)	Walsh et al. (1977)
Largescale sucker Catostomus macrocheilus	"	"	W	(0.05-0.28)	"
Klamath sucker Catostomus snyderi	"	"	W	(0.10-0.12)	"
Cisco, Lake herring Coregonus artedii	Lake Superior	liver	W	0.069±0.03	Lucas et al. (1970)
" "	Wisconsin	muscle	W	0.1	Kleinert et al. (1974)
" "	New York	"	W	(0.04-0.12)	Pakkala et al. (1972)
Lake white fish Coregonus clupeaformis	Lake Superior	liver	W	0.0064± 0.0007	Lucas et al. (1970)
" "	Lake Michigan	"	W	0.021±0.003	"
" "	Manitoba	muscle	W	0.09	Uthe & Bligh (1971)
" "	Lake Ontario	"	W	0.70	"
" "	United States	whole	W	(0.56-0.6)	Walsh et al. (1977)
" "	New York	muscle	W	(0.03-0.12)	Pakkala et al. (1972)
" "	United States (polluted area)	viscera	W	3.6	Ellis (1934)

Lake white fish _Coregonus_ _clupeaformis_	United States (polluted area)	muscle	W	2.7	Ellis (1934)
Bloater _Coregonus_ _hoyi_	Lake Superior	liver	W	0.063±0.017	Lucas et al. (1970)
" "	Lake Michigan	"	W	0.012	"
" "	United States	whole	W	(0.42-3.40)	Walsh et al. (1977)
Whitefish _Coregonus_ _lavaretus_	Norway	liver	W	<0.1	Lunde (1967)
Whitefish _Coregonus_ _sp._	Gulf of Finland		W	1.25	(1939) in Vinogradov (1953)
" "	"		D	4.8	"
Whitefish _Coregonus_ _williamsoni_ _cismontanus_	United States	muscle	W	2.7	Ellis (1934)
" " "	"	"	D	18.4	"
" " "	"	intestine	W	3.6	"
" " "	"	"	D	20.1	"
Slimy sculpin _Cottus_ _cognatus_	Great Lakes			(0.23-0.37)	Thomas (1972)
Carp _Cyprinus_ _carpio_	Don River		W	2.49	(1939) in Vinogradov (1953)
" "	"		D	7.35	"
" "	Volga River		W	1.28	"
" "	"		D	6.0	"
" "	United States		W	0.51	Ellis et al. (1941)
" "	"		D	2.35	"

Carp *Cyprinus carpio*	United States	whole	W	(0.05-0.52)	Walsh et al. (1977)
" "	New York	muscle	W	0.12	Pakkala et al. (1972)
" "	Wisconsin	"	W	(0.0-0.1)	Kleinert et al. (1974)
" "	Lake Erie	"	W	(0.14-0.21)	Willford (1971)
Gizzard shad *Dorosoma cepedianum*	New York	"	W	(0.0-0.25)	Pakkala et al. (1972)
" "	United States		W	(0.13-1.47)	Pillay et al. (1974)
" "	Lake Erie	"	W	(0.34-0.40)	Willford (1971)
" "	United States	whole	W	(<0.05-0.32)	Walsh et al. (1977)
Shad *Dorosoma sp.*	"		W	0.645	Ellis et al. (1941)
" "	"		D	3.855	"
Northern pike *Esox lucius*	Lake Ladoga		W	1.28	(1939) in Vinogradov (1953)
" "	"		D	7.65	"
" "	Caspian Sea		W	1.22	"
" "	"		D	6.0	"
" "	Don River		W	1.2	"
" "	"		D	6.4	"
" "	Norway		W	<0.1	Lunde (1967)
" "	Germany		W	(0.0-0.11)	Thumann (1941)
" "	Canada		W	(<0.05-0.09)	Uthe & Bligh (1971)

Northern pike *Esox lucius*	Manitoba	muscle	W	<0.05	Uthe & Bligh (1971)
" "	"	"	W	0.09	"
" "	Lake Erie	"	W	<0.05	"
" "	Sweden	"	W	0.026	Ljunggren et al. (1971)
" "	New York	"	W	(0.03-0.09)	Pakkala et al. (1972)
" "	Wisconsin	"	W	(0.0-0.1)	Kleinert et al. (1974)
" "	Great Britain		W	0.8	Chapman (1926)
Muskalonge *Esox masquinongy*	New York	muscle	W	0.20	Pakkala et al. (1972)
Pickerel *Esox niger*	United States		W	(0.13-0.73) 0.255	Ellis et al. (1941)
" "	"		D	1.125	"
" "	New York	"	W	(0.03-0.08)	Pakkala et al. (1972)
" "	United States	whole	W	(<0.5-0.5)	Walsh et al. (1977)
Pike *Esox sp.*			W	0.3	(1919) in Vinogradov (1953)
" "	Great Britain		W	1.0	Chapman (1924)
Mosquito fish *Gambusia affinis*	S. Florida	whole	W	0.07	Ogden et al. (1974)
Mosquito fish *Gambusia patruelis*	United States		W	0.412	Ellis et al. (1941)

Mosquito fish *Gambusia patruelis*	United States		D	1.94	Ellis et al. (1941)
Bluegill sunfish *Helioperca incisor*	"		W	0.517	"
" "	"		D	2.01	"
Goldeye *Hiodon alosoides*	"	whole	W	(<0.05-0.28)	Walsh et al. (1977)
Mooneye *Hiodon tergisus*	"	"	W	0.10	"
White catfish *Ictalurus catus*	"	"	W	(<0.05-0.20)	"
Blue catfish *Ictalurus furcatus*	"	"	W	(<0.05-0.11)	"
Black bullhead *Ictalurus melas*	"	"	W	(<0.05-0.16)	"
Brown bullhead *Ictalurus nebulosus*	"	"	W	(<0.05-0.21)	"
Channel catfish *Ictalurus punctatus*	Louisiana	wild, muscle	W	(0.0-0.3) 0.1±SD 0.1	Zook et al. (1976)
" "	Mississippi & Arkansas	cultivated, muscle	W	(0.2-3.1) 2.2±SD 1.3	"
" "	Lake Erie	muscle	W	(0.07-0.08)	Willford (1971)
" "	United States	whole	W	(<0.05-0.31)	Walsh et al. (1971)
Catfish *Ictalurus sp.*	New York		W	(0.03-0.04)	Pakkala et al. (1972)
" "	Wisconsin	muscle	W	0.0	Kleinert et al. (1974)
" "	New York	"	W	(0.0-0.09)	Pakkala et al. (1972)

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Smallmouth buffalo, Bullhead catfish *Ictiobus bubalus*	United States		W	0.705	Ellis et al. (1941)
" "	"		D	3.037	"
Bigmouth buffalo *Ictiobus cyprinellus*	"	whole	W	(0.05-0.26)	Walsh et al. (1977)
Labeo rohita	Paro, India		W	0.57	(1935) in Vinogradov (1953)
Lamprey *Lampetra sp.*	United States		W	0.547	Ellis et al. (1941)
" "	"		D	2.75	"
Lepibema chrysops	"		W	0.48	"
" "	"		D	1.94	"
Spotted gar *Lepisosteus oculatus*	"	whole	W	0.05	Walsh et al. (1977)
Long-nose gar *Lepisosteus osseus*	"		W	(0.35-0.4) 0.367	Ellis et al. (1941)
" "	"	"	D	1.118	"
" "	"	"	W	(<0.05-0.08)	Walsh et al. (1977)
Florida gar *Lepidosteus platyrhincus*	S. Florida	"	W	0.5	Ogden et al. (1974)
Redbreast sunfish *Lepomis auritus*	United States	"	W	(<0.05-0.11)	Walsh et al. (1977)
Pumkinseed *Lepomis gibbosus*	Wisconsin	muscle	W	(0.13-0.17)	Kleinert et al. (1974)
" "	United States	whole	W	(<0.05-0.16)	Walsh et al. (1977)

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Bluegill Lepomis macrochirus	Wisconsin			(0.09-0.19)	Gilderhus (1966)
" "	" pools treated with As			(0.12-11.6)	"
" "	" "	muscle		1.3	"
" "	" "	skin & scale		2.4	"
" "	" "	gill & digestive tract		17.6	"
" "	" "	liver		11.6	"
" "	" "	kidney		5.9	"
" "	" "	ovary		8.4	"
" "	Wisconsin	muscle	W	(0.0-0.11)	Kleinert et al. (1974)
" "	S. Florida	whole	W	(0.05-0.09)	Ogden et al. (1974)
" "	United States	"	W	0.52	Ellis et al. (1941)
" "	"	"	W	(<0.05-0.15)	Walsh et al. (1977)
Longear sunfish Lepomis megalotis	"	"	W	0.22	"
Chub Leuciscus cephalus	Norway	oil	W	0.7	Lunde (1967)
" "	Great Britain	muscle	W	0.5	Chapman (1926)
Roach Leuciscus idus	Norway	oil	W	<0.1	Lunde (1967)
Burbot Lota lota	New York	muscle	W	0.19	Pakkala et al. (1972)

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Burbot *Lota lota*	Wisconsin	muscle	W	0.1	Kleinert et al. (1974)
Pike-perch *Lucioperca lucioperca*	New Ladoga		W	1.8	(1939) in Vinogradov (1953)
" "	"		D	9.2	"
" "	Don River		W	1.88	(1939) in Vinogradov (1953)
" "	"		D	11.9	"
" "	Volga River		W	1.02	"
" "	"		D	5.2	"
" "	Kura River		W	1.24	"
" "	"		D	5.55	"
" "	Caspian Sea		W	1.54	"
" "	"		D	6.2	"
" "	Norway	oil	W	0.3	Lunde (1967)
Smallmouth bass *Micropterus dolomieui*	Wisconsin	muscle	W	(0.0-0.12)	Kleinert et al. (1974)
" "	Lake Erie	"	W	0.22	Willford (1971)
" "	New York	"	W	(0.03-0.51)	Pakkala et al. (1972)
" "	United States	whole	W	(<0.05-0.28)	Walsh et al. (1977)
Largemouth bass *Micropterus salmoides*	"		W	0.622	Ellis et al. (1941)
" "	"		D	3.09	"
" "	"	liver, oil	W	(7.37-77.31) 40.0	"

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Largemouth bass *Micropterus salmoides*	United States	whole	D	1.74	Ellis et al. (1941)
" "	"	fat		2.34	"
" "	"	liver	W	4.5	"
" "	"	"	D	15.0	"
" "	"	liver fat		40.5	"
" "	"	whole	W	(<0.05-0.22)	Walsh et al. (1977)
" "	S. Florida	"	W	0.05	Ogden et al. (1974)
" "	Wisconsin	muscle	W	(0.0-0.12)	Kleinert et al. (1974)
" "	New York	"	W	(0.03-0.16)	Pakkala et al. (1972)
Spotted sucker *Minytrema melanops*	United States	whole	W	(0.062-0.253) 0.21	Ellis et al. (1941)
" "	"	"		1.24	"
" "	"	"	W	(<0.05-0.12)	Walsh et al. (1977)
White perch *Morone americana*	"	"	W	(<0.05-0.24)	"
White bass *Morone chrysops* (=Roccus chrysops)	Lake Erie	liver	W	0.098	Lucas et al. (1970)
" "	"	muscle	W	(0.18-0.28)	Willford (1971)
" "	New York	"	W	(0.15-0.28)	Pakkala et al. (1972)
" "	Wisconsin	"	W	(0.0-0.11)	Kleinert et al. (1974)
" "	United States		W	(0.28-0.48)	Ellis et al. (1941)

White bass Morone chrysops (=Roccus chrysops)	United States	whole	W	(<0.05-0.24)	Walsh et al. (1977)
Striped bass Morone saxatilis	New York	muscle	W	(0.23-0.69)	Pakkala et al. (1972)
Redhorse Moxostoma sp.	Wisconsin	"	W	(0.0-0.1)	Kleinert et al. (1974)
" "	United States	whole	W	(<0.05-0.11)	Walsh et al. (1977)
Peamouth chub Mylocheilus caurinus	"	"	W	(<0.05-0.80)	"
Golden shiner Notemigonus chrysoleucas	"		W	(0.55-1.95) 0.975	Ellis et al. (1941)
" "	"	whole	D	5.66	"
" "	"	"	W	(0.09-0.10)	Walsh et al. (1977)
Spot-tail shiner Notropis hudsonius	Lake Michigan	"	W	0.003	Lucas et al. (1970)
" "	Lake Erie	"	W	0.0035±0.003	"
Salmon Oncorhynchus gorbuscha	Kamtchatka		W	0.9	(1939) in Vinogradov (1953)
" "	"		D	3.5	"
Chum salmon Oncorhynchus keta	Okhotsk Sea		W	1.5	"
" "	"		D	6.0	"
Coho salmon Oncorhynchus kisutch	Wisconsin	muscle	W	(0.0-0.14)	Kleinert et al. (1974)
" "	Lake Erie	"	W	(0.07-0.17)	Willford (1971)

Coho salmon *Oncorhynchus kisutch*	New York	muscle	W	(0.0-0.49)	Pakkala et al. (1972)
" "	United States	"	W	0.09	Pillay et al. (1974)
Salmon *Oncorhynchus sp.*	W. Canada	"	W	<0.4	LeBlanc & Jackson (1973)
Rainbow smelt *Osmerus mordax*	Lake Erie	"	W	0.15	Uthe & Bligh (1971)
" "	"	whole	W	0.26	Willford (1971)
" "	Lake Michigan	liver	W	0.002	Lucas et al. (1970)
" "	Great Lakes			(0.18-1.09)	Thomas (1972)
Sacramento blackfish *Orthodon microlepidnotus*	United States	whole	W	0.10	Walsh et al. (1977)
Yellow perch *Perca flavescens*	Lake Erie	liver	W	0.007±0.002	Lucas et al. (1970)
" "	"	muscle	W	<0.05	Uthe & Bligh (1971)
" "	"	"	W	(0.04-0.05)	Willford (1971)
" "	Wisconsin	"	W	(0.0-0.11)	Kleinert et al. (1974)
" "	United States	whole	W	(<0.05-0.16)	Walsh et al. (1977)
European perch *Perca fluviatilis*	Norway	oil	W	(<0.1-0.8)	Lunde (1967)
" "	Great Britain		W	0.6	Chapman (1926)

Perch *Perca sp.*			W	0.6	(1925) in Vinogradov (1953)
" "	Great Britain		W	0.57	(1926) in Vinogradov (1953)
" "	New York	muscle	W	(0.03-0.08)	Pakkala et al. (1972)
Trout perch *Percopsis omiscomaycus*	Lake Michigan	whole	W	0.043±0.012	Lucas et al. (1970)
" "	Lake Superior	"	W	0.007±0.002	"
Sucker-mouthed minnow *Phenacobius mirabilis*	United States		W	0.27	Ellis et al. (1941)
" "	"		D	1.155	"
White crappie *Pomoxis annularis*	"	whole	W	(0.05-0.34)	Walsh et al. (1977)
Black crappie *Pomoxis nigromaculatus*	New York	muscle	W	(0.03-0.16)	Pakkala et al. (1972)
" "	United States	whole	W	(0.05-0.42)	Walsh et al. (1977)
" "	New York			(<0.1-0.14)	Ullman et al. (1961)
Crappie *Pomoxis sp.*	Wisconsin	muscle	W	(0.0-0.1)	Kleinert et al. (1974)
Round whitefish *Prosopium cylindraceum*	Lake Superior	liver	W	0.0056±0.0034	Lucas et al. (1970)
" "	United States	whole	W	(<0.05-0.13)	Walsh et al. (1977)
Northern squawfish *Ptychocheilus oregonensis*	"	"	W	(<0.05-0.31)	"

Flathead catfish *Pylodictus olivaris*	United States	whole	W	(ND-0.12)	Walsh et al. (1977)
Yellow bass *Roccus mississippiensis*	Wisconsin	muscle	W	0.0	Kleinert et al. (1974)
Loach *Rutilus rutilus*	Great Britain		W	0.4	Chapman (1926)
" "	Don River		W	1.06	Shtenberg (1939)
" "	"		D	4.7	"
Char *Salmo alpinus*	Norway	muscle, oil		<0.1	Lunde (1967)
Salmo eriox	"	"		<0.1	"
Rainbow trout, steelhead *Salmo gairdneri*	Wisconsin	muscle	W	(0.0-0.14)	Kleinert et al. (1974)
" "	United States	whole	W	(0.05-0.16)	Walsh et al. (1977)
" "	New York	muscle	W	(0.03-0.09)	Pakkala et al. (1972)
" "	W. Canada	"	W	<0.4	LeBlanc & Jackson (1973)
Yellowstone cut-throat *Salmo lewisi*	United States	"		2.4	Ellis et al. (1941)
" "	"	"	D	17.4	"
" "	"	intestine	W	5.3	"
" "	"	"	D	10.6	"
Atlantic salmon *Salmo salar*	Norway	oil, liver	W	6.7	Lunde (1967)
" "	"	oil,muscle	W	3.1	"

Atlantic salmon *Salmo salar*	Norway	oil, muscle	W	(0.75-1.73) 1.02	Ljunggren et al. (1971)
Salmon *Salmo sp.*	Kura River		W	2.46	(1939) in Vinogradov (1953)
" "			D	6.42	"
Brown trout *Salmo trutta*	Gulf of Finland		W	1.43	"
" "	"		D	5.27	"
" "	New York	muscle	W	(0.03-0.2)	Pakkala et al. (1972)
" "	Wisconsin	"	W	0.0	Kleinert et al. (1974)
" "	United States	whole	W	(0.05-0.23)	Walsh et al. (1977)
Brook trout, speckled trout *Salvelinus fontinalis*	New York	"	W	(0.03-0.09)	Pakkala et al. (1972)
" "	Wisconsin	muscle	W	0.0	Kleinert et al. (1974)
Splake *Salvelinus fontinalis* X *namaycush*	New York		W	0.04	Pakkala et al. (1972)
Lake trout *Salvelinus namaycush*	Lake Superior	liver	W	0.08±0.01	Lucas et al. (1970)
" "	Lake Michigan	"	W	0.018±0.003	"
" "	New York	muscle	W	(0.03-0.3)	Pakkala et al. (1972)
" "	Wisconsin	"	W	(0.12-0.35)	Kleinert et al. (1974)
" "	United States	whole	W	(0.06-0.68)	Walsh et al. (1977)

Fallfish *Semotilus atromaculatus*	United States		W	0.577	Ellis et al. (1941)
" "	"		D	2.7	"
Sheatfish *Silurus glanis*	Don River		W	3.85	Shtenberg (1939)
" "	"		D	25.0	"
" "	Volga River		W	3.55	"
" "	"		D	13.4	"
Sauger *Stizostedion canadense*	United States	whole	W	(<0.05-0.19)	Walsh et al. (1977)
Walleye *Stizostedion vitreum*	Lake Erie	liver	W	(0.030-0.098)	Lucas et al. (1970)
" "	"	muscle	W	(0.11-0.12)	Willford (1971)
" "	"	"	W	(0.10-0.12)	Pillay et al. (1972)
" "	Great Lakes			(0.23-0.95)	Thomas (1972)
" "	New York	"	W	(0.03-0.3)	Pakkala et al. (1972)
" "	United States	whole	W	(<0.05-0.24)	Walsh et al. (1977)
" "	Wisconsin	muscle	W	(0.0-0.16)	Kleinert et al. (1974)
Arctic grayling *Thymallus arcticus*	United States	whole	W	<0.05	Walsh et al. (1977)
Tench *Tinca tinca*	Great Britain		W	0.4	Chapman (1926)

Vimba vimba	Don River	0.85	(1939) in Vinogradov (1953)
" "	"	3.41	"
" "	"	1.26	"

ARSENIC IN MOLLUSCA (1)

Species	Locality	Tissue		Analysis (2) PPM	Authority
Calico scallop Aequipecten gibbus	Florida	soft parts	W	(3.5-5.0) 4.2±SD 0.4	Zook et al. (1976)
Atlantic bay scallop Aequipecten irradians (=Argopecten irradians)	N.W. Atlantic	"	W	0.70±SE 0.31	Nelson et al. (1976)
" "	Massachusetts	"	W	(0.5-1.1) 0.7±SD 0.2	Zook et al. (1976)
Buttercup Anodonta cygnea	Great Britain	"	D	4.3	Leatherland & Burton (1974)
Aolliceps cornucopia	Portugal	cooked	W	(1.2-8.6)	Costa & DaFonseca (1967)
Aristeus antennatus	"		W	(4.4-19.6)	"
Cholgas Aulacomya ater	Peru	muscle		(0.56-1.4)	Echegaray (1974)
Northern whelk Buccinum undatum	Great Britain	soft parts	W	(12.0-49.0) 24.0	Chapman (1926)
" "	"	"	D	11.0	Leatherland & Burton (1974)

(1) Blank spaces indicate information not available or not applicable. ? indicates questionable data.

(2) W, D or A indicates on a Wet, Dry or Ashed basis. A single number indicates a single determination or mean. (x-y) indicates range of values, followed by the mean. ± Standard deviation (SD), standard error (SE), median, and geometric mean are indicated as reported. pCi/g = picocuries per gram.

Channeled whelk _Busycon_ _canaliculatum_	Maryland	heart & tongue	W	(1.2-2.2) 1.6±SD 0.3	Zook et al. (1976)
" "	Long Island	muscle	W	9.0	Greig et al. (1977b)
Cockle _Cerastoderma_ _edule_ (=Cardium edule)	Great Britain	soft parts	D	(5.1-6.3)	Leatherland & Burton (1974)
" "	"	mantle fluid	D	8.4	"
" "	"		W	(17.0-40.0) 22.5	Chapman (1926)
" "	Washington		W	12.8	Cardiff (1937)
" "	Portugal		W	(1.3-2.4)	Costa & DaFonseca (1967)
Chiton _Chiton_ _sp._	Grand Bahama Island	whole		2.10	Taylor & Bright (1973)
Cockle _Clinocardium_ _sp._	W. Canada	soft parts	W	(<0.5-15.6) med. 1.1	LeBlanc & Jackson (1973)
Portuguese oyster _Crassostrea_ _angulata_ (=Gryphia angulata)	Great Britain		W	(33.0-70.0) 44.0	Chapman (1926)
" "	"	soft parts	D	10.0	Leatherland & Burton (1974)
" "			W	34.0	Vinogradov (1953)
" "	Portugal		W	(1.2-3.6)	Costa & DaFonseca (1967)

Rock oyster *Crassostrea commercialis*	Australia	soft parts	W	(0.3-3.4)1.2	Mackay et al. (1975a)
Giant pacific oyster *Crassostrea gigas*	W. United States	"	W	(<0.1-0.4) 0.07	Jelinek & Corneliussen (1977)
American oyster *Crassostrea virginica*			D	(0.1-1.5) 1.0	(1919) in Vinogradov (1953)
" "	United States	fresh	W	2.9	Schroeder & Balassa (1966)
" "	"	frozen	W	2.7	"
" "	"		D	(0.0-1.5)	Vinogradov (1953)
" "	"	tinned	W	(0.4-0.8)	Chapman (1926)
" "	Texas	soft parts	D	1.3	Sims & Presley (1976)
" "	United States	canned	W	0.22	Dick & Pugsley (1950)
" "	"	smoked	W	1.0	"
" "	"		W	(0.5-1.0)	(1926) in Vinogradov (1953)
" "	N.W. Atlantic		D	(<1.0-3.6) <1.6	Windom (1972)
" "	"		W	(0.15-0.54) <0.24	"
" "	United States	soft parts	W	(ND-1.2)0.09	Jelinek & Corneliussen (1977)

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American oyster _Crassostrea virginica_	Long Island	soft parts	W	(0.6-2.5) 1.0±SD 0.5	Zook et al. (1976)
" "	Chesapeake Bay	"	W	(0.6-1.6) 0.8±SD 0.3	"
Atlantic slipper shell _Crepidula fornicata_	Great Britain	"	D	(8.1-13.0)	Leatherland & Burton (1974)
Donax _Donax sp._	Peru			1.7	Echegaray (1974)
Donax _Donax trunculus_	Portugal		W	(1.8-3.7)	Costa & DaFonseca (1967)
Garden snail _Helix hortensis_	Great Britain	soft parts	W	0.4	Chapman (1926)
Periwinkle _Littorina littoralis_	"	"	D	12.0	Leatherland & Burton (1974)
Periwinkle _Littorina littorea_	"	"	W	(20.0-40.0) 24.8	Chapman (1926)
" "	"	"	D	(14.0-19.0)	Leatherland & Burton (1974)
" "	Newfoundland	"	D	(4.0-15.0)	Penrose et al. (1975)
" "	Norway	oil	W	84.0	Lunde (1972)
" "	"	fatty acid	W	32.0	"
" "	Portugal	soft parts (cooked)	W	(3.6-6.3)	Costa & DaFonseca (1967)

Squid Loligo vulgaris	Portugal	soft parts	W	(0.8-7.5)	Costa & DaFonseca (1967)
" "	"	" cooked	W	(0.4-3.3)	"
" "	Norway	fatty acid	W	0.7	Lunde (1972)
Short squid Loliguncula brevis	N.W. Atlantic		D	(<1.0-2.1) <1.2	Windom (1972)
" "	"		W	(<0.27-0.57) <0.325	"
Macoma clam Macoma sp.	W. Canada	soft parts	W	(<0.5-15.6) med. 1.1	LeBlanc & Jackson (1973)
Northern quahog Mercenaria mercenaria	N.W. Atlantic	"	D	(9.0-50.0) 28.0	Windom (1972)
" "	"	"	W	(1.0-2.5) 1.8±SD 0.6	Zook et al. (1976)
" "	Great Britain	"	D	5.9	Leatherland & Burton (1974)
" "	"	mantle	D	7.8	"
" "	"	adductor	D	1.8	"
" "	"	gill	D	12.2	"
" "	"		D	(2.0-12.0)	Raymont (1972)
" "	United States	soft parts	W	(<0.1-1.4) 0.12	Jelinek & Corneliussen (1977)
Machas Mesmodesma donacium	Peru	muscle		(0.53-0.89) 0.71	Echegaray (1974)

Rock shell *Murex trunculus*	Portugal		W	(14.6-26.4)	Costa & DaFonseca (1967)
Soft shell clam *Mya arenaria*			W	2.0	(1933) in Vinogradov (1953)
" "	United States	soft parts	W	(<0.1-0.9) 0.14	Jelinek & Corneliussen (1977)
" "	Chesapeake Bay	"	W	(1.0-2.5) 1.8±SD 0.6	Zook et al. (1976)
Blue mussel *Mytilus edulis*	Great Britain		W	(36.0-119.0) 80.5	Chapman (1926)
" "	"		D	(9.5-15.0)	Leatherland & Burton (1974)
" "	"		D	(9.0-15.0)	Raymont (1972)
" "	Norway	raw material	D	8.0	Lunde (1970)
" "	"	oil	W	18.0	" (1972)
" "	"	fatty acid	W	22.0	"
" "	"	water soluble	D	9.7	" (1970)
" "	"	whole	D	0.6	" (1973)
" "	W. Greenland	soft parts	D	(14.1-16.7)	Bohn (1975)
" "				(1.3-5.0)	Kohn-Abrest (1951)
" "	France (exposed to As 100 µg/l	muscle		(0.04-0.1)	Sautet et al. (1964)

Blue mussel *Mytilus edulis*	France	shell		(0.005-0.02)	Sautet et al. (1964)
" "	"	byssus		(2.5-5.0)	"
" "	"	excreta		(5.5-8.0)	"
" "	California		W	0.085	Gorgy et al. (1948)
" "			W	69.0	Vinogradov (1953)
" "	Newfoundland	soft parts	D	(1.6-5.3)	Penrose et al. (1975)
" "	Italy (fed arsenic)		W	(0.04-3.73)	Del Vecchio et al. (1962)
" "	" (normal)		W	0.01	"
Mussel *Mytilus magellonicus*	Peru		D	(10.5-26.1)	Moyana (1956)
Dog whelk *Nucella lapillus*	Great Britain	soft parts	D	(16.0-38.0)	Leatherland & Burton (1974)
Octopus *Octopus bimaculatus*	California	tentacle	W	0.121	Gorgy et al. (1948)
Octopus *Octopus sp.*	Bahama Islands	whole		16.11	Taylor & Bright (1973)
Atlantic octopus *Octopus vulgaris*	N.W. Atlantic		D	24.0	Windom (1972)
" "	Portugal	raw	W	(2.6-40.3)	Costa & DaFonseca (1967)
" "	"	cooked	W	(3.0-24.3)	"

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Squid *Ommastrephes sagittatus*	Norway	raw material	D	6.5	Lunde (1970)
" "	"	water soluble	D	17.0	"
Oyster *Ostrea edulis*	"	raw material	D	7.6	"
" "	"	"	W	2.6	"
" "	"	water soluble	D	9.8	"
" "	Great Britain	soft tissue	W	(3.0-10.0) 5.5	Chapman (1926)
" "	"		W	6.0	"
" "				(1.8-3.1)	Kohn-Abrest (1951)
" "	"	"	D	(5.1-6.4)	Leatherland & Burton (1974)
" "	"	mantle cavity fluids	D	8.4	"
European limpet *Patella vulgata*	Irish Sea		W	(1.0-4.7)	Peden et al. (1973)
" "	Great Britain	soft parts	D	(11.0-24.0)	Leatherland & Burton (1974)
Scallop *Pecten maximus*	Norway	raw material	W	11.6	Lunde (1970)
" "	"	water soluble	W	18.0	"
" "	"	lipid	W	4.8	" (1972)

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Scallop *Pecten sp.*	Grand Bahama Island	whole		1.79	Taylor & Bright (1973)
Smooth sea scallop *Placopecten magellanicus*	N.W. Atlantic	soft parts	W	(1.3-2.4)1.6 ±SD 0.3	Zook et al. (1976)
Shark eye *Polineces duplicatus*	N.W. Atlantic		D	(3.2-5.0) 4.2	Windom (1972)
Almejas, semele *Semele solida*	Peru	muscle		1.39	Echegaray (1974)
Cuttlefish *Sepia officinalis*	Great Britain	gill	D	73.0	Leatherland & Burton (1974)
" "	"	mantle	D	198.0	"
" "			D	49.0	(1903) in Vinogradov (1953)
" "	Portugal	raw	W	(6.2-11.5)	Costa & DaFonseca (1967)
" "	"	cooked	W	(0.8-6.8)	"
Jackknife clam *Solen marginatus*	"	raw	W	(1.92-4.2)	"
" "	"	cooked	W	(1.4-2.7)	"
Atlantic surf clam *Spisula solidissima*	Chincoteague Maryland	muscle	W	1.3±SE 0.09	Greig et al. (1977b)
Conch *Strombus sp.*		fresh	W	3.1	Schroeder & Balassa (1966)
" "		dried	W	5.63	"

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Littleneck clam *Tapes decussatus*	Portugal		W	(3.7-6.6)	Costa & Da Fonseca (1967)
Littleneck clam *Tapes japonica*	Japan		D	0.0036?	Fukai & Meinke (1962)
Dogwinkle *Thais chocolata*	Peru			(0.24-46.08) 9.26	Echegaray (1974)
Vivipara japonica				(4.6-6.1)	(1934) in Vinogradov (1953)
"Clams"	United States	frozen	W	2.52	Schroeder & Balassa (1966)
"	Canada	canned	D	15.9	Dick & Pugsley (1950)
"	"	"	W	0.36	"
"	"	"	W	0.85	Cardiff (1937)
"French edible snail"			W	0.5	Chapman (1926)
"Scallops"	United States	fresh	W	1.67	Schroeder & Balassa (1966)
"	Great Britain	"	W	(36.0-85.0) 46.0	Chapman (1926)
"Marine mollusca"	Pacific		D	3.49	(1939) in Vinogradov (1953)

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ARSENIC IN ARTHROPODA (1)

Species	Locality	Tissue	Analysis (2) PPM	Authority
CRUSTACEA				
Decapod *Acanthephyra eximia*	N.W. Africa		D 17.0	Leatherland et al. (1973)
Copepod *Acartia clausi*	Greece	whole	D (1.6-4.0) 2.9±0.5	Zafiropoulos & Grimanis (1977)
Crayfish *Astacus pallipes*	Great Britain		W (1.0-2.0) 1.35	Chapman et al. (1926)
" "	"		W (0.8-1.5)	"
Blue crab *Callinectes sapidus*	N.W. Atlantic		D (1.0-4.4)1.8	Windom (1972)
" "	S. Florida	whole	W 7.68	Ogden et al. (1974)
" "	Chesapeake Bay	soft parts	W (0.5-1.8) 1.3±SD 0.4	Zook et al. (1976)
" "	Texas	whole	D 0.6	Sims & Presley (1976)

(1) Blank spaces indicate information not available or not applicable. ? indicates questionable data.

(2) W, D or A indicates on a Wet, Dry or Ashed basis. A single number indicates a single determination or mean. (x-y) indicates range of values, followed by the mean. ±Standard deviation (SD), standard error (SE), median, and geometric mean are indicated as reported. pCi/g = picocuries per gram.

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Crayfish *Cambarus sp.*	S. Florida	whole	W	0.38	Ogden et al. (1974)
Crab *Cancer anthonyi*	S. California	muscle	W	(17.29-51.02)	Fowler et al. (1975)
Rock crab *Cancer irroratus*	Delaware	"	W	1.9	Greig et al. (1977b)
Dungeness crab *Cancer magister*	W. Canada	"	W	(2.2-37.8) med. 6.5	LeBlanc & Jackson (1973)
Crab *Cancer pagurus*	Portugal	cooked	W	(2.1-33.4)	Costa & DaFonseca (1967)
Green crab *Carcinus maenas*	"	"	W	(2.5-7.0)	"
Shrimp *Eualus macilentus*	Newfoundland	egg	W	(2.6-12.7) 6.7±SD 3.15	Kennedy (1976)
Mysidacid *Eucopia sculpticauda*	N.W. Africa		D	30.0	Leatherland et al. (1973)
Euphausiidae	Newfoundland	whole	W	(1.5-2.3) 1.8±SD 0.35	Kennedy (1976)
Gammaridae	"	"	W	(4.4-8.9) 6.6±SD 3.18	"
Red crab *Geryon quinquedens*	Middle Atlantic Bight	muscle	W	1.6	Greig et al. (1976)
" "	"	gill	W	9.1	"
Mantis shrimp *Gonodactylus sp.*	Grand Bahama Island	whole		(1.50-11.96)	Taylor & Bright (1973)
American lobster *Homarus americanus*	Newfoundland	muscle	D	(3.8-7.6)	Penrose et al. (1975)

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American lobster *Homarus americanus*	Canada	canned	W	22.1	Dick & Pugsley (1950)
" "	"	"	W	0.94	"
" "	Nova Scotia	tail muscle		40.5	Reinke et al. (1975)
" "	"	hepato-pancreas		22.5	"
" "	N.W. Atlantic		W	(0.5-16.0) 10.0	Windom (1972)
" "			D	0.06	(1903) in Vinogradov (1953)
Lobster *Homarus sp.*	S. Florida		W	(15.5-18.8)	Ogden et al. (1974)
" "			D	14.5 (max.)	(1933) in Vinogradov (1953)
" "	Great Britain		W	(18.0-40.0)	Chapman (1926)
" "	"	muscle	W	(105.0-110.0)	"
" "		liver	W	36.0	"
" "	"	stomach contents	W	17.0	"
" "	Portugal	cooked	W	(10.8-17.2)	Costa & DaFonseca (1967)
" "		muscle	W	0.022	Barnard (1911)
" "		whole	W	0.453	"
Lobster *Homarus vulgaris*	Norway	muscle	D	5.3	Lunde (1970)
" "	"	water soluble	D	14.0	"

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Lobster *Homarus vulgaris*	Sweden	tail muscle	W	8.0	Ljundggren et al. (1971)
Copepod *Labidocera acutifrons*	N.W. Africa		D	14.5	Leatherland et al. (1973)
Lepas anatifera			D	16.7	(1929) in Vinogradov (1953)
Euphausid *Meganyctiphanes norvegica*	N.W. Africa		D	42.0	Leatherland et al. (1973)
" "	Baltic Sea		W	(1.95-5.5)	Ljunggren et al. (1971)
Stone crab *Menippe mercenaria*	S. Florida	whole	W	(8.97-11.8)	Ogden et al. (1974)
Spider crab *Mithrax sp.*	Grand Bahama Island	"		(3.66-5.47)	Taylor & Bright (1973)
Crab *Mursia gaudichaudii*	S. California	muscle	W	(2.10-10.08) 6.23±SE 0.97	Fowler et al. (1975)
" "	"	gonad	W	(3.79-30.54) 9.19±SE 3.14	"
" "	"	digestive gland	W	(3.27-25.80) 12.44±SE 2.44	"
Dublin Bay prawn *Nephrops norvegicus*	Great Britain	muscle	W	(38.0-100.0) 56.6	Chapman (1926)
" "	"		W	(27.0-130.5)	"
" "	"	internal organs	W	(20.0-70.0) 39.2	"
" "	"	shell	W	(5.0-7.0)	"

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Dublin Bay prawn *Nephrops norvegicus*	Baltic Sea	tail muscle	W	8.0	Ljunggren et al. (1971)
" "	Portugal	cooked	W	(7.2-19.4)	Costa & DaFonseca (1967)
Decapod *Oplophorus sp.*	N.W. Africa		D	23.5	Leatherland et al. (1973)
Shrimp *Palaemon elegans*	Great Britain		D	16.0	Burton (1974)
Shrimp *Palaemon serratus*	Portugal	cooked	W	(1.0-2.7)	Costa & DaFonseca (1967)
Deep sea prawn, *Pandalus borealis*	W. Greenland			80.2 (max.)	Bohn (1975)
" "	"	head & shell	D	(65.9-70.6)68.3	"
" "	"	abdominal muscle	D	(52.5-70.6)61.6	"
" "	Oslo Fjord, Norway	oil	D	42.0	Lunde (1973)
" "	Skagerak Norway	"	D	30.0	"
" "	"	fatty acid	W	4.8	" (1972)
" "	"	oil	W	10.1	"
" "	"	"	W	13.0	Luzanski (1936)
" "	N.W. Atlantic	"	W	(3.6-9.4) 6.0±SD 1.9	Zook et al. (1976)
" "	Newfoundland	egg	W	(3.7-14.0)	Kennedy (1976)

Prawn *Pandalus montagui*	Newfoundland	egg	W	(4.0-19.6)	Kennedy (1976)
Shrimp *Pandalus sp.*	Japan	soft parts	D	0.051	Fukai & Meinke (1962)
" "	"		A	0.83	"
" "	South Carclina		W	(5.94-41.60)	Coulson et al. (1935)
" "	Great Britain		W	18.9	Chapman (1926)
" "			W	10.0 (max.)	(1933) in Vinogradov (1953)
Spiny lobster *Panulirus argus*	N.W. Atlantic		D	14.0	Windom (1972)
Spiny lobster *Panulirus borealis*	Florida	tail muscle	W	(3.2-9.6) 7.2±SD 1.9	Zook et al. (1976)
Spiny lobster *Panulirus sp.*		whole	W	0.45	(1904) in Vinogradov (1953)
" "		muscle	W	(0.0016-0.357)	"
" "		carapace	W	(0.076-1.04)	"
" "	Florida	whole	W	(15.5-18.8)	Ogden et al. (1974)
Spiny lobster *Panulirus vulgaris*	Great Britain	muscle	W	(20.0-45.0) 32.2	Chapman (1926)
" "	"	spawn	W	70.0	"
" "	"	stomach contents	W	(10.0-24.0)18.0	"

Spiny lobster *Panulirus vulgaris*	Portugal	cooked	W	(12.0-54.6)	Costa & DaFonseca (1967)
King crab *Paralithodes camschatica*	Alaska	body muscle	W	(2.6-7.0) 3.8±SD 1.2	Zook et al. (1976)
" "	"	leg muscle	W	(2.3-6.7) 4.3±SD 1.5	"
Shrimp *Parapenaeus longirostris*	Portugal		W	(1.7-38.2)	Costa & DaFonseca (1967)
Brown shrimp *Penaeus aztecus*	Texas	muscle	W	(3.1-5.2) 4.4±SD 0.7	Zook et al. (1976)
" "	"	whole	D	0.6	Sims & Presley (1976)
White shrimp *Penaeus setiferus*	N.W. Atlantic		D	(2.2-6.3)3.8	Windom (1972)
" "	Texas	whole	D	3.8	Sims & Presley (1976)
" "	Mississippi	muscle	W	(1.7-4.4) 3.0±SD 0.8	Zook et al. (1976)
" "	Florida	"	W	(2.8-7.7) 4.6±SD 1.3	"
Kelp crab *Pugettia producta*	California	feces	A	266.0±74.0	Boothe & Knauer (1972)
Shrimp *Sabinea septemcarinenta*	Newfoundland	egg	W	(3.9-22.7)	Kennedy (1976)
" "	"	muscle	W	(5.4-10.4)	"
Arrow crab *Stenorhynchus sp.*	Bahama Islands	whole		20.17	Taylor & Bright (1973)

Decapod *Systellapis debilis*	N.W. Africa		D	22.0	Leatherland et al. (1973)
"Crab"	Great Britain	muscle	W	(36.0-70.0) 49.0	Chapman (1926)
"			W	10.0	(1933) in Vinogradov (1953)
"			W	79.5	"
"	Japan	canned	W	(20.0-85.0)	Chapman (1926)
"	Canada	"		25.0	Dick & Pugsley (1950)
"	Nova Scotia			3.7	Reinke et al. (1975)
"Crayfish"	Great Britain	"	W	(17.0-20.0)	Dick & Pugsley (1950)
"	"	fresh	W	(1.0-2.0) 1.3	"
"Prawn"	"	muscle	W	(36.0-174.0) 71.5 (The sample with 174.0 was 24 prawns)	Chapman (1926)
"	"	spawn	W	(64.0-67.0)	"
"	"		W	14.5	(1933) in Vinogradov (1953)
"	United States	canned	W	(10.5-30.0)	Chapman (1926)
"	Japan	"	W	(15.0-63.8)	"
"Pagurid crab"	Grand Pahama Island			5.45	Taylor & Bright (1973)

"Shrimp"	Great Britain	muscle	W	(12.0-40.0) 24.5	(1926) in Vinogradov (1953)
"	"	canned, muscle	W	(11.0-25.0) 18.0	"
"Bay shrimp"	S.E. United States		W	(1.27-18.80)	Coulson et al. (1935)
"Shrimp"	Canada	canned		19.9	Dick & Pugsley (1950)
"	Gulf of Mexico		W	(2.5-12.7)	Johnson & Braman (1975)
"	United States	shell	W	15.3	Schroeder & Balassa (1966)
"	"	frozen	W	1.5	"
"	Nova Scotia			3.9	Reinke et al. (1975)
"Gulf shrimp"	Texas		W	1.94	Coulson et al. (1935)
INSECTA					
Honeybee _Apis_ _mellifera_	Victoria	adults, dead from As spray	W	(3.22-12.0)	Eagland (1936)
" "		"	W	(20.8-31.2)	Lockemann (1935)
" "	Victoria	larvae, dead from As spray	W	(4.95-13.0)	Eagland (1936)
" "	United States	pupae, dead from As dust	W	10.0	Eckert & Allinger (1936)
"Insects"	Tennessee		D	10.0	Andren et al. (1973)

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ARSENIC IN LOWER ANIMALS (1)

Species	Locality	Tissue	Analysis PPM (2)	Authority
PORIFERA				
Sponge *Desmacidon fruticosum*			D 0.15	(1903) in Vinogradov (1953)
Sponge *Ephydatia fluviatilis*	fresh water		D (8.1-12.0)	(1929) in Vinogradov (1953)
Sponge *Halichondria sp.*	Sweden fresh water		D 5.0	Noddack & Noddack (1940)
Sponge *Halichondria panicea*	Great Britain		D 2.8	Leatherland & Burton (1974)
Sponge *Spongia sp.*			D 5.5	(1923) in Vinogradov (1953)
Sponge *Spongilla lacustris*	fresh water		D (9.1-24.0)	(1929) in Vinogradov (1953)

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"Sponge"	Grand Bahama Island	whole	0.90	Taylor & Bright (1973)
COELENTERATA				
Jellyfish *Cynaea capillata*	Sweden		D 50.0	Noddack & Noddack (1940)
Actinian *Chitonactis richardi*	Sea of Azof		D 0.015	Vinogradov (1953)
Sea anemone *Metridium dianthus*	Sweden		D 9.0	Noddack & Noddack (1940)
"Hydromedusa"	Sea of Azof		D 16.7	Vinogradov (1953)
Coral *Pocillopora verrucosa*	Eniwetok Island	Reduces As V to As III		Pilson (1974)
Tealia felina	Great Britain		D 72.0	Leatherland & Burton (1974)
SCYPHOZOA				
Pelagia sp.	N,W. Africa		D 11.0	Leatherland et al. (1973)
ANNELIDA				
Tubificid *Limnodrilus sp.*			D 13.0	Vinogradov (1953)
Clam worm, ragworm *Nereis diversicolor*	Great Britain		D 5.2	Leatherland & Burton (1974)
Polychaetes	Grand Bahama Islands	whole	20.68	Taylor & Bright (1973)
"Earthworms"	Tennessee		D 19.0	Andren et al. (1973)

ECHINODERMATA					
Sea star *Asterias rubens*	Sweden	without viscera	D	4.0	Noddack & Noddack (1940)
" "	Great Britain		D	10.0	Leatherland & Burton (1974)
Sea urchin *Brissopsis lyrifera*	Sweden		D	8.0	Noddack & Noddack (1940)
Sand dollar *Echinarachnius parma*	Newfoundland	whole	D	(1.5-10.8)	Penrose et al. (1975)
Sea star *Marthasterias glacialis*	Great Britain		D	5.8	Leatherland & Burton (1974)
Sea star *Pisoster ochraceus*	California		D	1.26	Gorgy et al. (1948)
Sea cucumber *Stichopus tremulus*	Sweden	without viscera	D	2.0	Noddack & Noddack (1940)
Sea urchin *Strongylocentrus droebachiensis*	Newfoundland	gonad	D	(1.3-6.0)	Penrose et al. (1975)
" "	leachate, dist. from stibnite mine (meters):				
" "	" "	0	D	6.0±SD 2.3	"
" "	" "	35	D	5.6±SD 1.5	"
" "	" "	57	D	3.8±SD 0.9	"
" "	" "	117	D	1.35	"
" "	" "	180	D	2.1±SD 1.0	"

Sea urchin *Strongylocentrus droebachiensis*	leachate, dist. from stibnite mine (meters):				Penrose et al. (1975)
" "	" "	189	D	1.9±SD 0.1	"
" "	" "	280	D	3.3±SD 0.5	"
Crinoid	Grand Bahama Island			9.81	Taylor & Bright (1973)
Ophiurida	"			(16.40-50.90)	"
"Starfish"	Norway	oil	W	9.1	Lunde (1972)
"	"	fatty acid	W	7.5	"
TUNICATA					
Tunicate *Botryllus schlosseri*	Great Britain		D	6.6	Leatherland & Burton (1974)
Tunicate *Ciona intestinalis*	Sweden		D	3.0	Noddack & Noddack (1940)
Tunicate *Pyrosoma sp.*	N.W. Africa		D	1.5	Leatherland et al. (1973)
Tunicate *Styela clava*	Great Britain		D	4.8	Leatherland & Burton (1974)

ARSENIC IN HIGHER PLANTS (1)

Species	Locality	Tissue	Analysis PPM (2)	Authority
Fir *Abies alba*	Italy	wood	0.11	Minguzzi & Naldoni (1950)
Balsam fir *Abies lasiocarpa*	British Columbia	twig	A <1.0	Warren et al. (1968)
Bentgrass *Agrostis canina*	Great Britain (on mine waste)		D 460.0 (max.) mean 350.0	Porter & Peterson (1975)
Bentgrass *Agrostis stolonifera*	" "		D 1,350.0 (max.) mean 1,000.0	"
Colonial bentgrass *Agrostis tenuis*	" "		D 3,470.0 (max.) mean 1,480.0	"
" "	Great Britain (on low As soil)		D (0.28-3.0)	"
" "	" (on mine waste)	seed	D 2000.0	"
" "	" "	leaf	D 670.0	"

(1) Blank spaces indicate information not available or not applicable. ? indicates questionable data.

(2) W, D or A indicates on a Wet, Dry or Ashed basis. A single number indicates a single determination or mean. (x-y) indicates range of values, followed by the mean. ±Standard deviation (SD), standard error (SE), median, and geometric mean are indicated as reported. pCi/g = picocuries per gram.

Colonial bentgrass Agrostis tenuis	Great Britain (on mine waste)	young leaf	D	100.0	Porter & Peterson (1975)
" "	" "	old leaf	D	1,340.0	"
Onion Allium cepa	New Hampshire		W	(0.14-0.18)	Schroeder & Balassa (1966)
" "	Montana (smelter area)		W	(0.05-3.2)	Hindawi & Neely (1972)
" "		top	D	3.19	Jones & Hatch (1945)
" "	New York		D	0.4	Elfving et al. (1978)
Garlic Allium sativum	United States		W	0.24	Schroeder & Balassa (1966)
Alder Alnus sp.	British Columbia	twig	A	<1.0	Warren et al. (1968)
Ragweed Ambrosia sp.			D	1.0	Williams & Whetstone (1940)
Pineapple Ananas comosa			W	0.08	Jadin & Astruc (1912)
Celery Apium graveolens dulce		stalk	D	0.6	Williams & Whetstone (1940)
" " "		whole plant	D	2.32	Jadin & Astruc (1912)

Celery *Apium graveolens dulce*	Canada	root	D	1.0	Chattopadhyay et al. (1972)
" " "			D	(0.2-0.75)	Nat. Acad. Sci. (1977)
Parsley *Apium petroselinum*	New Hampshire		W	1.3	Schroeder & Balassa (1966)
Sagebrush *Artemisia tridentata*	Wyoming		D	(6.0-28.0) 12.7	Cannon (1969)
Sagebrush *Artemisia sp.*	"		D	60.0	" (1974)
Asparagus *Asparagus officinalis*			D	0.1	Jadin & Astruc (1912)
Wild aster *Aster sp.*			D	2.0	Williams & Whetstone (1940)
Locoweed *Astragalus bisulcatus*			D	<0.1	"
Locoweed *Astragalus pectinatus*			D	<0.1	"
Fern *Athyrium angustatum*	United States		W	0.24	Schroeder & Balassa (1966)
Saltbush *Atriplex confertifolia*	New Zealand		D	3.2	Headden (1910)
Oats *Avena sativa*	Montana (near smelter area)	kernel	W	0.1	Hindawi & Neely (1972)
" "	Canada	grain	D	(0.09-0.13)	Chisholm & MacPhee (1972)

Oats *Avena sativa*	Canada	straw	D	0.28	Chisholm & MacPhee (1972)
" "			D	(<0.1-2.28)	Nat. Acad. Sci.(1977)
Beet *Beta vulgaris*	United States	root	W	0.0	Schroeder & Balassa (1966)
" "	" "	leaf	W	0.24	"
" "	Montana (smelter area)		W	(0.0-0.4)	Hindawi & Neely (1972)
" "			D	1.27	Jones & Hatch (1945)
" "		top	D	(0.07-3.48)	Nat. Acad. Sci. (1977)
" "		root	D	(0.1-1.3)	"
Swiss chard *Beta vulgaris cicla*	Maryland	leaf & stem	D	(0.16-0.66)	Furr et al. (1976)
" " "	United States		W	0.56	Schroeder & Balassa (1966)
" " "			D	(<0.01-0.08)	Chisholm (1972)
Rutabaga *Brassica napobrassica*	Montana (smelter area)		W	0.5	Hindawi & Neely (1972)
" "			D	0.8	Williams & Whetstone (1940)
Kale *Brassica oleracea acephala*			D	(0.11-0.22)	Nat. Acad. Sci. (1977)

Kale *Brassica oleracea acephala*		top	D	(0.01-0.99)	Bradicich et al. (1969)
" " "			D	(0.01-0.99)	Jones & Hatch (1945)
" " "		root	D	0.39	"
Cauliflower *Brassica oleracea botrytis*			D	0.86	Jadin & Astruc (1912)
Cabbage *Brassica oleracea capitata*	Montana	head	W	(0.0-0.9)	Hindawi & Neely (1972)
" " "	New York	"	D	<0.1	Elfving et al. (1978)
Brussels sprouts *Brassica oleracea gemmifera*	New Hampshire		W	ND	Schroeder & Balassa (1966)
Kohlrabi *Brassica oleracea gongylodes*	Montana (smelter area)		W	(0.05-0.1)	Hindawi & Neely (1972)
Broccoli *Brassica oleracea italica*	grown on soil with Pb arsenate		D	trace	McLean et al. (1944)
Turnip *Brassica rapa*	United States	root	W	0.0	Schroeder & Balassa (1966)
" "		"	D	<0.01	Chisholm (1972)
" "		top	D	0.03	Bradicich et al. (1969)

Northern reed grass *Calamagrostis canadensis*	N.W. Territory		D	(12.6-89.4)	O'Toole et al. (1971)
" "	dist. from smelter(mi.):	0.3	D	12.6	"
" "	" "	1.0	D	19.8	"
" "	" "	1.8 (highest soil As conc.)	D	89.4	"
" "	" "	2.3	D	12.9	"
Scotch heather *Calluna vulgaris*	Great Britain (low As area)		D	0.33 (max.) mean 0.3	Porter & Peterson (1975)
" "	Great Britain (on mine waste, high As site)		D	4,130.0 (max.) mean 1,260.0	"
Chili pepper *Capsicum annuum*	United States		W	ND	Schroeder & Balassa (1966)
Red pepper *Capsicum frutescens*	" "		W	0.06	"
" "			D	0.0	Bradicich et al. (1969)
" "		root	D	1.57	Jones & Hatch (1945)
" "			D	0.39	"
Sedge *Carex sp.*	Malaya (near tin smelter)		D	33.0	Peterson et al. (1976)
Hickory *Carya sp.*	Tennessee		D	(0.1-0.4)	Andren et al. (1973)

Chestnut *Castanea vesca*	Italy	wood	D	0.05	Minguzzi & Naldoni (1950)
" "	France		D	0.11	Jadin & Astruc (1912)
Coontail *Ceratophyllum demersum*	New Zealand (geothermal area)		D	(20.0-1,060.0)	Lancaster et al. (1971)
" "	" "		D	971.0	Reay (1972)
Japanese quince *Chaenomales maulei*	United States	leaf	W	0.19	Schroeder & Balassa (1966)
Lambs quarter *Chenopodium album*			D	1.0	Williams & Whetstone (1940)
Endive *Cichorium endiva*			D	0.21	Von Fellenberg (1929)
Chicory *Cichorium intybus*	Italy		D	0.62	Barela & Pizzeri (1966)
" "			W	0.1	Jadin & Astruc (1912)
Lemon *Citrus limon*	Italy	fruit	D	0.5	Barela & Pezzeri (1966)
" "		leaf	D	0.35	Liebig et al. (1959)
Grapefruit *Citrus paradisi*	Florida	"	D	(2.0-3.0)	Roy (1943)
Tangerine *Citrus reticulata*			D	0.85	Jadin & Astruc (1912)

Orange *Citrus sinensis*	Florida		W	0.11	Miller et al. (1933)
" "	United States		W	0.0	Schroeder & Balassa (1966)
Yellow clintonia *Clintonia borealis*	Quebec (Cu mine area smelter)	leaf	D	(<2.0-52.0)	LeBlanc et al. (1974)
" "	" (control)	"	D	(<2.0-4.0)	"
Coffee *Coffea arabica*	treated with Pb arsenate	bean	D	(0.5-1.5)	Pereira & Echandi (1964)
Compsopogon hookeri	New Zealand (in geothermal area)		D	550.0	Reay (1972)
Filbert *Corylus avellana*			D	0.11	Jadin & Astruc (1912)
Hazelnut *Corylus sp.*			D	0.78	Barela & Pezzeri (1966)
Gherkin *Cucumis anguria*			D	0.14	Cardiff (1937)
Canteloupe *Cucumis melo*	New Hampshire		W	ND	Schroeder & Balassa (1966)
Cucumber *Cucumis sativus*			D	(0.02-2.4)	Nat. Acad. Sci. (1977)
Squash *Cucurbita maxima*	United States		D	(0.023-0.034)	McLean et al. (1944)
" "	New Hampshire		W	0.0	Schroeder & Balassa (1966)

Pumpkin Cucurbita pepo			W	0.09	Jadin & Astruc (1912)
Italian cypress Cupressus sempervirens	Italy	wood		1.4	Minguzzi & Naldoni (1950)
Carrots Daucus carota var sativa	New Hampshire	root	W	0.74	Schroeder & Balassa (1966)
" " "	Virgin Islands	"	W	0.0	"
" " "	Montana (smelter area)		W	(0.0-2.9)	Hindawi & Neely (1972)
" " "		"	D	0.32	Jones & Hatch (1945)
" " "		top	D	(0.0-0.57)	"
" " "			D	(0.03-0.8)	Nat. Acad. Sci. (1977)
" " "	New York	root	D	0.9	Elfving et al. (1978)
Egeria densa	New Zealand (geothermal area)		D	(266.0-310.0)	Lancaster et al. (1971)
Water weed Elodea canadensis	" "		D	(48.0-700.0)	"
" "			D	3.0	"
Ehretia microphylla	Malaya (near tin smelter)		D	74.0	Peterson et al. (1976)
Spurge Euphorbia sp.			D	<1.0	Williams & Whetstone (1940)

Buckwheat _Fagopyrum_ _fagopyrum_	United States	grain	W	1.3	Schroeder & Balassa (1966)
Beech _Fagus_ _sylvatica_	Italy	wood	D	<0.05	Minguzzi & Naldoni (1950)
Fern _Gleichenia_ _linearis_	Malaya (near tin smelter)		D	(0.4-1.3)	Peterson et al. (1976)
Japanese millet _Echinochloa_ _crusgalli_ var. _frumentacea_	New York		D	0.9	Elfving et al. (1978)
Soybean _Glycine_ _max_	Japan	bean	D	0.08	Kawashiro & Kondo (1962)
" "	United States	"	D	(0.05-1.22)	Ansul Co. (1971)
" "	" "	fodder	D	(0.07-2.12)	"
" "	" "	oil	D	0.09	Bradicich et al. (1969)
Cotton _Gossypium_ _herbaceum_	" "	cottonseed oil	W	0.0	Schroeder & Balassa (1966)
" "	" "	"	D	0.05	Baker et al. (1969)
" "	" "	leaf	D	0.055	Bradicich et al. (1969)
Haplopappus _fremontii_			D	1.0	Williams & Whetstone (1940)
Sunflower _Helianthus_ _annuus_	Montana (smelter area)	"	W	3.3	Hindawi & Neely (1972)

Sunflower Helianthus annuus			D	(<1.0-2.0)	Cardiff (1937)
Velvet grass Holcus lanatus	Great Britain (on mine waste, high As site)		D	max. 560.0 mean 350.0	Porter & Peterson (1975)
Barley Hordeum vulgare	United States	grain	W	0.85	Schroeder & Balassa (1966)
" "	Montana (smelter area)	kernel	W	(0.0-0.9)	Hindawi & Neely (1972)
" "	" "	straw	W	14.3	"
" "	Washington	grain	W	<0.1	Haller et al. (1969)
" "			D	(<0.1-0.55)	Nat. Acad. Sci. (1977)
Sweet potato Ipomoea batatas			D	0.0	Bradicich et al. (1969)
Jasione montana	Great Britain (on mine waste high As site)		D	max. 6,640.0 mean 2,040.0	Porter & Peterson (1975)
Black walnut Juglans nigra			W	0.13	Jadin & Astruc (1912)
Walnut Juglans sp.			D	0.07	Barela & Pezzeri (1966)
Lettuce Lactuca sativa	New Hampshire		W	0.27	Schroeder & Balassa (1966)
" "	Montana (smelter area)		W	(0.0-2.1)	Hindawi & Neely (1972)

Lettuce *Lactuca sativa*			D	0.12	Jones & Hatch (1945)
" "		root	D	0.47	"
" "			D	(0.01-3.78)	Nat. Acad. Sci. (1977)
Lakeweed *Lagarosiphon major*	New Zealand (geothermal area)		D	(29.0-1,450.0)	Lancaster et al. (1971)
" "	" "		D	405.0	Reay (1972)
Sweet pea *Lathyrus odoratus*	Montana (smelter area)		W	(0.05-0.1)	Hindawi & Neely (1972)
Duckweed *Lemna sp.*	New Zealand		D	2.5	Lancaster et al. (1971)
Lentil *Lens culinaris*			W	0.1	Jadin & Astruc (1912)
Leptospermum ericoides	New Zealand (geothermal area)		D	<1.0	Reay (1972)
Leptospermum scoparium	" "		D	1.7	"
Tulip poplar *Liriodendron tulipifera*	Tennessee		D	(0.08-0.4)	Andren et al. (1973)
Tomato *Lycopersicon esculentum*	New Hampshire	fruit	W	(0.0-0.37)	Schroeder & Balassa (1966)
" "	Virgin Islands		W	0.0	"
" "				(0.01-2.95)	Nat. Acad. Sci. (1977)

Tomato *Lycopersicon esculentum*		stem & leaf	D	6.75	Jones & Hatch (1945)
" "		"	D	<0.2	Geisman et al. (1969)
" "		root	D	<0.2	"
" "		"	D	(0.26-0.49)	Jones & Hatch (1945)
" "	New York	fruit	D	<0.1	Elfving et al. (1978)
Apple *Malus sylvestris*	Montana (smelter area)	"	W	(0.05-0.1)	Hindawi & Neely (1972)
" "	Washington	"	W	0.018±0.006	Haller et al. (1969)
" "	United States	"	W	0.0	Schroeder & Balassa (1966)
" "			D	(0.04-1.72)	Nat. Acad. Sci. (1977)
Scarlet mallow *Malva sp.*			D	1.0	Williams & Whetstone (1940)
Maidapple *Mamordica carenthia*	Virgin Islands		W	0.29	Schroeder & Balassa (1966)
Alfalfa *Medicago sativa*	United States		W	1.6	"
" "	Montana (smelter area)		W	(0.4-5.7)	Hindawi & Neely (1972)
" "			D	(0.05-3.38)	Jadin & Astruc (1912)

Alfalfa *Medicago sativa*			D	(0.05-3.38)	Morrison (1969)
" "		top	D	1.97	Jones & Hatch (1945)
" "		root	D	3.15	"
Melastoma malabathricum	Malaya (near tin smelter)		D	(1.6-3.3)	Peterson et al. (1976)
Banana *Musa acuminata*			D	0.06	Jadin & Astruc (1912)
Parrot feather *Myriophyllum propinquum*	New Zealand (geothermal area)	whole	D	456.0	Lancaster et al. (1971)
Tobacco *Nicotiana tabacum*	United States	leaf	W	(0.0-51.0)	Jenkins (1972)
" "	"	cigarette	D	(1.8-15.4)	Nadkarni & Ehmann (1970)
" "	"	pipe	D	(2.0-4.5)	"
" "	"	cigar	D	(1.5-5.8)	"
Nitella *Nitella hookeri*	New Zealand (geothermal area)	whole	D	182.0	Lancaster et al. (1971)
" "	" (control)	"	D	13.0	"
Oreocarya sp.			D	<1.0	Williams & Whetstone (1940)
Mimosa *Mimosa pudica*	Malaya (near tin smelter)		D	(32.0-50.0)	Peterson et al. (1976)

Clayton's fern *Osmunda claytoniana*	United States		W	0.0	Schroeder & Balassa (1966)
Cinnamon fern *Osmunda cinnamomea*	"		W	0.21	"
Royal fern *Osmunda regalis*	"		W	0.49	"
Rice *Oryza sativum*	"	grain	W	0.13	"
" "	Madagascar	"	W	0.48	"
" "		"	D	<0.1	Haller et al. (1969)
" "			D	0.4	Reed & Sturgis (1936)
" "		"	D	(<0.07-3.53)	Nat. Acad. Sci. (1977)
" "		whole	D	(0.8-5.0)	Epps & Sturgis (1939)
Parsnip *Pastinaca sativa*	Washington		D	0.2	Cardiff (1937)
Garden parsley *Petroselinum crispum latifolium*			D	(0.1-8.0)	"
Lima bean *Phaseolus limensis*	Washington	bean	D	<0.1	Haller et al. (1969)
" "	New Hampshire	"	W	0.0	Schroeder & Balassa (1966)
" "			D	0.4	Cardiff (1937)
Bean *Phaseolus spp.*	United States	bean	W	(0.0-0.09)	Schroeder & Balassa (1966)

Bean *Phaseolus spp.*	Montana	green bean	W	<0.05	Hindawi & Neely (1972)
" "		"	D	trace	Clements & Munson (1947)
" "		pod	D	0.27	Jacobs et al. (1970)
" "		leaf	D	0.21	"
" "		bean	D	0.07	Machlis (1941)
" "		vine	D	0.18	Jones & Hatch (1945)
" "		root	D	0.29	"
Bush bean *Phaseolus vulgaris*	Russia	bean	D	0.33	Kapandze (1948)
" "	New York	"	D	<0.1	Elfving et al. (1978)
Date palm *Phoenix dactylifera*			W	0.12	Jadin & Astruc (1912)
White spruce *Picea alba*	Canada (near gold mine, As contaminated soil)	branch		(2.8-14.3)	Rosehart & Lee (1973)
" "	" "	leaf		(2.08-9.5)	"
" "	" "	trunk		(0.3-55.0)	"
" "	" "	root		(45.0-130.0)	"
" "	" (control)	branch		2.1	"
" "	" "	leaf		2.1	"
" "	" "	trunk		2.4	"
" "	" "	root		1.0	"

Black spruce *Picea mariana*	Quebec Cu mine area	leaf	D	(<1.0-96.0)	LeBlanc et al. (1974)
Spruce *Picea sp.*	British Columbia	twig	A	(<1.0-13.0)	Warren et al. (1968)
Lodgepole pine *Pinus contorta*	"	"	A	(13.0-14.0)	"
Short-leaf pine *Pinus echinata*	Tennessee		D	(0.1-0.2)	Andren et al. (1973)
White pine *Pinus flexilis*	British Columbia	leaf	A	<1.0	Warren et al. (1968)
Pinus laricinus	Italy	wood	D	0.13	Minguzzi & Naldoni (1950)
Scotch pine *Pinus sylvestris*	"	"	D	0.05	"
Peas *Pisum sativum*	Virgin Islands	dried	W	0.09	Schroeder & Balassa (1966)
" "	"	fresh	W	0.0	"
" "	Washington	dried, split	D	<0.1	Haller et al. (1969)
" "			D	(0.01-0.4)	Jones & Hatch (1945)
Fern *Polystichum acrostichoides*	United States		W	0.2	Schroeder & Balassa (1966)
Posidonia *Posidonia oceanica*		leaf	D	0.45	(1913) in Vinogradov (1953)
" "		root	D	0.35	"

Pondweed *Potamogeton cheesemanii*	New Zealand (geothermal area)	whole	D	45.0	Lancaster et al. (1971)
" "	" (control)	"	D	<6.0	"
Pondweed *Potamogeton crispus*	New Zealand (geothermal area)	whole	D	(11.0-436.0)	"
Almond *Prunus amygdalus*			D	0.3	Jadin & Astruc (1912)
Apricot *Prunus armeniaca*			D	(0.15-1.5)	Collins (1918)
Peach *Prunus persica*			D	(0.07-1.5)	Bradicich et al. (1969)
Douglas fir *Pseudotsuga menziesii*	British Columbia (in As-bearing areas & mine)	2nd-yr stem	A	(2.0-8,200.0)	Warren et al. (1968)
" "	" "	1st-yr stem	A	(510.0-2,110.0)	"
" "	" "	1st-yr needle	A	(120.0-1,060.0)	"
" "	" "	2nd-yr stem	A	(70.0-1,390.0)	"
" "	" "	2nd-yr. needle	A	(25.0-180.0)	"
" "	" "	stem (max.)	A	8,200.0	"
" "	" (in non-As area)	stem, needle	A	(3.0-100.0)	"
" "		needle	D	(4.0-8,000.0)	Delavault & Manson (1971)

Fern *Pteridium latiusculum*	United States		W	0.73	Schroeder & Balassa (1966)
Fern *Pteritis nodulosa*	"		W	0.34	"
Pear *Pyrus communis*	France			0.07	Bertrand (1920)
" "	Washington	fruit	W	0.046±0.006	Haller et al. (1969)
" "	United States	"	W	0.0	Schroeder & Balassa (1966)
" "		"	W	0.17	Jadin & Astruc (1912)
" "		"	D	0.39	Headden (1910)
" "	Japan	skin	D	(0.4-0.6)	Tankawa & Nakane (1969)
Chestnut oak *Quercus prinoides*	Tennessee		D	(0.05-0.4)	Andren et al. (1973)
" "	"	acorn	D	0.1	"
" "	"	root	D	11.0	"
Buttercup *Ranunculus aquatilus*	Wyoming		D	180.0	Cannon (1974)
Radish *Raphanus sativus*	Montana (smelter area)	root	W	trace	Hindawi & Neely (1972)
Rhubarb *Rheum rhaponticum*	United States		W	0.48	Schroeder & Balassa (1966)

Rhubarb Rheum rhaponticum			D	<0.1	Williams & Whetstone (1940)
Watercress Rorippa nasturtium-aquaticum			D	(1.84-2.1)	Jadin & Astruc (1912) & Kapanadze (1948)
Wild rose Rosa acicularis	Northwest Territories Dist. from smelter (miles)				O'Toole et al. (1971)
" "	" " " 0.4		D	138.0	"
" "	" " " 0.8		D	39.1	"
" "	" " " 1.8		D	26.9	"
" "	" " " 1.9		D	15.4	"
Sorrel Rumex acetosella	Italy (in As-containing area)			(0.9-1.7)	Berbenni (1959)
Sugarcane Saccharum officinarum			D	2.0	Pemberton (1934)
Willow Salix sp.	British Columbia	leaf & twig	A	(1.0-4.0)	Warren et al. (1968)
Rush Scirpus sp.	New Zealand (geothermal area)		D	12.0	Reay (1972)
Rye Secale cereale	United States	grain	W	(0.0-0.16)	Schroeder & Balassa (1966)
" "	Russia		D	<0.1	Shtenberg (1940)

Millett *Setaria italica*	Russia		D	<0.1	Shtenberg (1940)
" "	United States		W	1.03	Schroeder & Balassa (1966)
Soopolallia *Shepherdia canadensis*	British Columbia	twig	A	<0.1	Warren et al. (1968)
Egg plant *Solanum melogena*	Virgin Islands		W	0.82	Schroeder & Balassa (1966)
" "	New Hampshire		W	0.0	"
" "	Russia		D	(0.18-0.77)	Kapandze (1948)
" "			D	(0.0-6.14)	McLean (1944)
" "		root	D	0.98	Jones & Hatch (1945)
Potato *Solanum tuberosum*	United States		W	0.13	Schroeder & Balassa (1966)
" "	Wisconsin	potato skin	D	(0.4-2.4)	Steevens et al. (1972)
" "	"	tuber		1.0	"
" "	Italy (As containing area)	leaf		(0.3-0.6)	Berbenni (1959)
" "	Montana (smelter area)	tuber	W	(0.0-0.1)	Hindawi & Neely (1972)
" "			D	(0.01-0.05)	Chisholm (1972)
" "	Sweden	"	D	0.2	Sihlbom (1956)

Potato *Solanum tuberosum*			D	(0.0076-1.25)	Nat. Acad. Sci. (1977)
" "	New York	tuber	D	<0.1	Elfving et al. (1978)
Spinach *Spinacia oleracea*	New Hampshire		W	1.1	Schroeder & Balassa (1966)
" "			D	(0.04-2.25)	Nat. Acad. Sci. (1977)
Sudan grass *Sorghum vulgare sudanense*			D	0.7	Machlis (1941)
Cocoa *Theobroma cacao*		Hershey chocolate	W	0.59	Schroeder & Balassa (1966)
Cedar *Thuya plicata*	British Columbia	twig	A	1.0	Warren et al. (1968)
Spanish moss *Tillandsia usnoides*	United States		A	(<0.1-2.0) geom. mean 0.79	Shacklette & Connor (1973)
" "			Good monitoring organism for As		"
Tridax procumbens	Malaya (near tin smelter)		D	(1.0-122.0)	Peterson et al. (1976)
Red clover *Trifolium pratense*			D	0.37	Cardiff (1937)
" "			D	(0.11-0.39)	Sieczka & Lisk (1971)
White clover *Trifolium repens*			D	3.64	Jones & Hatch (1945)

Clover *Trifolium sp.*			D	(‹0.1-0.17)	Morrison (1969)
" "			D	0.46	Chisholm & MacPhee (1972)
Wheat *Triticum aestivum*	United States		W	(0.17-2.4)	Schroeder & Balassa (1966)
" "	Montana (smelter area)	kernel	W	(0.0-trace)	Hindawi & Neely (1972)
" "			D	(0.09-0.16)	Ansul Co. (1971)
" "			D	(0.007-0.3)	Nat. Acad. Sci. (1977)
Hemlock *Tsuga canadensis*		leaf	D	(0.2-0.4)	Sinclair et al. (1975)
Tulip *Tulipa gesneriana*	Netherlands		W	(0.0-3.6)	Schroeder & Balassa (1966)
" "			D	2.0	Williams & Whetstone (1940)
Cat tail *Typha orientalis*	New Zealand (in geothermal area)		D	8.0	Lancaster et al. (1971)
" "	" "		D	8.0	Reay (1972)
Lowbush blueberry *Vaccinium angustifolium*	Maine (soil arsenic)	leaf	D	(6.74-14.97)	Anastasia & Kender (1973)
" "	" (untreated)	"	D	0.78	"
" "	" "	stem	D	0.27	"
" "	" "	root	D	2.4	"

Ironweed *Vernonia sp.*			D	1.0	Williams & Whetstone (1940)
Vetch *Vicia sativa*		plant	D	1.22	Jones & Hatch (1945)
" "		root	D	7.15	"
Grape *Vitis sp.*	United States	wild	W	0.17	Schroeder & Balassa (1966)
" "	Washington	raisin	D	<0.1	Haller et al. (1969)
" "	Europe	juice		0.0	Herrman & Kretsdorn (1939)
" "	"	skin		0.0	"
" "	"	leaf	D	2.3	"
" "		fruit	D	(0.75-1.2)	Tankawa & Nakane (1969)
" "		"	D	0.05	Daris et al. (1971)
Cocklebur *Xanthium strumarium*				<1.0	Williams & Whetstone (1940)
Corn *Zea mays*	United States	grain	W	0.11	Schroeder & Balassa (1966)
" "	" "	meal	W	0.78	"
" "	" "	oil	W	0.0	"
" "		grain	D	(<0.01-0.05)	"
" "		"	D	(0.05-0.07)	"

Corn *Zea mays*	stalk & leaf	W	0.04	Jadin & Astruc (1912)
" "	"	D	(0.6-2.5)	Woolson (1972)
" "	"	D	0.71	Jones & Hatch (1945)
" "	seedling	D	3.0	Woolson et al. (1973)
"Forage grasses"			(0.1-0.62) 0.3	Cannon (1974)
" "			(0.1-14.0)5.4	"

ARSENIC IN MOSS(1)

Species	Locality	Tissue	Analysis(2) PPM	Authority
Hylocomium splendens	Quebec Cu mine area		D (4.0-99.0)	LeBlanc et al. (1974)
Pleurozium schreberi	"		D (1.0-10.0)	"

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ARSENIC IN ALGAE (1)

Species	Locality	Tissue	Analysis (2) PPM	Authority
Green alga *Agarum fimbretum*	Norway		D 4.0	Lunde (1973)
Red alga *Ahnfeltia plicata*	Nova Scotia		D 2.0	Young & Langille (1958)
" "	Great Britain		D 39.0	Leatherland & Burton (1974)
Red alga *Alsidium helminthochorton*			D 0.25	(1911) in Vinogradov (1953)
Brown alga *Ascophyllum nodosum*	Nova Scotia		D 38.0	Young & Langille (1958)
" "			D 0.05	(1913) in Vinogradov (1953)
" "	Newfoundland		D 9.8±SD 2.0	Penrose et al. (1975)

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Brown alga Ascophyllum nodosum	Newfoundland (runoff from stibnite mine)		D	17.2±SD 2.5	Penrose et al. (1975)
" "	Norway	lipid	D	(7.8-49.0)	Lunde (1972a)
" "	"	fatty acid	D	(5.2-21.0)	"
Green alga Casteria castata	United States		D	1.0	Williams & Whetstone (1940)
Red alga Ceramium rubrum	Nova Scotia		D	7.0	Young & Langille (1958)
Green alga Chaetomorpha melagonium	"		D	5.0	"
Green alga Chlorella ovalis	Norway	lipid	D	0.7	Lunde (1972a)
Green alga Chlorella pyrenoidosa	"	"	D	0.5	"
Irish moss Chondrus crispus	Nova Scotia		D	5.0	Young & Langille (1958)
" "	Great Britain		D	(5.0-11.0)	Jones (1922)
" "	" "		W	6.3	(1933) in Vinogradov (1953)
" "	" "		D	12.0	Chapman (1926)
" "	" "		D	11.0	Leatherland & Burton (1974)
Green alga Cladophora rupestris	Nova Scotia		D	10.0	Young & Langille (1958)

Green alga Cladophora utriculosa			D	0.8	(1913) in Vinogradov (1953)
" "	France		D	0.08	(1902) in Vinogradov (1953)
Seaweed Cystophyllum fusiforme	Japan		D	(122.0-180.0)152.0	Shimokawa et al. (1971)
Brown alga Cystoseira sp.			D	0.4	(1913) in Vinogradov (1953)
Green alga Enteromorpha compressa	Great Britain		D	15.0	Jones (1922)
Green alga Enteromorpha nana	New Zealand geothermal area		D	14.0	Lancaster et al. (1971)
Brown alga Fucus digitatus	France		D	2.08?	(1902) in Vinogradov (1953)
Brown alga Fucus evanescens	Nova Scotia		D	(30.0-75.0)	Young & Langille (1958)
Brown alga Fucus nodosus	Great Britain		D	(57.0-60.0)	Jones (1922)
" "	" "	thallus	D	32.0	"
" "	" "	filament	D	40.0	"
Brown alga Fucus serratus	" "		D	90.0	"
" "	" "		D	(48.0-54.0)	Leatherland & Burton (1974)
" "	France		D	0.82?	(1902) in Vinogradov (1953)

Brown alga *Fucus serratus*	Norway	lipid	D	27.0	Lunde (1972a)
" "	"	fatty acid	D	6.1	"
" "			D	1.7	Portmann & Riley (1964)
Brown alga *Fucus sp.*	Newfoundland (control)		D	12.1±SD 6.6	Penrose et al. (1975)
" "	" (runoff from stibnite mine)		D	17.2±SD 7.8	"
Brown alga *Fucus spiralis*	Norway		D	15.0-34.0)	Lunde (1972a)
" "	"		D	5.7	"
" "	"		D	5.0	"
Brown alga *Fucus vesiculosus*	Nova Scotia		D	58.0	Young & Langille (1958)
" "	Great Britain		D	80.0	Jones (1922)
" "	France		D	0.82?	(1902) in Vinogradov (1953)
" "	Norway	lipid	D	35.0	Lunde (1972a)
" "	"	fatty acid	D	5.1	"
" "	W. Greenland		D	(35.2-35.8)	Bohn (1975)
Red alga *Gelidium cartilageneum*	Nova Scotia		D	5.0	Young & Langille (1958)
Red alga *Gigartina mammillosa*	Great Britain		D	(6.0-23.0)	Jones (1922)
Red alga *Gigartina stellata*	Nova Scotia		D	10.0	Young & Langille (1958)

Red alga *Gracilaria confervoides*	Nova Scotia		D	8.0	Young & Langille (1958)
Brown alga *Halidrys siliquosa*	Great Britain		D	26.0	Leatherland & Burton (1974)
" "	" "		D	40.0	Jones (1922)
Red alga *Halopitys pinastroides*			D	0.2	(1913) in Vinogradov (1953)
Red alga *Halosaccion ramentaceum*	Nova Scotia		D	8.0	Young & Langille (1958)
Red alga *Jania rubens*			D	3.0	(1913) in Vinogradov (1953)
Brown alga *Laminaria digitata*	Great Britain		D	125.0	Jones (1922)
" "	Nova Scotia		D	50.0	Young & Langille (1958)
" "	"	frond	D	55.0	"
" "	"	stipe	D	42.0	"
" "	Great Britain		D	47.0	Leatherland & Burton (1974)
" "			D	0.5	(1911) in Vinogradov (1953)
" "	Norway	lipid	D	221.0	Lunde (1972a)
" "	"	fatty acid	D	36.0	"

Brown alga *Laminaria digitata lamina*	Norway		D	(107.0-109.0)	Lunde (1970a)
Brown alga *Laminaria hyperborea*	"		D	63.0	"
" "	"	lipid	D	197.0	" (1972a)
" "	"		D	142.0	" (1973)
Brown alga *Laminaria longicrurus*	Nova Scotia		D	52.0	Young & Langille (1958)
Brown alga *Laminaria saccharina*	Great Britain		D	70.0	Jones (1922)
" "	" "		D	45.0	Leatherland & Burton (1974)
" "	Norway	lipid	D	155.0	Lunde (1972a)
" "			D	0.1	(1911) in Vinogradov (1953)
Brown alga *Laminaria sp.*	Japanese Sea		D	30.8	Shtenberg (1939)
Red alga *Laurencia obtusa*			D	5.0	(1913) in Vinogradov (1953)
Brown alga, kelp *Macrocystis pyrifera*	California		D	17.3	Gorgy et al. (1948)
" "	"	(calc.)	D	(48.0-96.0) 77.0	Boothe & Knauer (1972)
" "	"		A	(72.0-144.0) 116.0±26.0	"
" "	New Zealand		D	58.0	Wilson & Fieldes (1941)

Oscillatoria rubescens	Norway	lipid	D	(0.4-0.5)	Lunde (1972a)
Brown alga *Padina pavonia*			D	0.9	(1913) in Vinogradov (1953)
Brown alga, channel wrack *Pelvetia canaliculata*	Norway		D	(15.0-22.0)	Lunde (1970a)
" "	"	lipid	D	10.8	" (1972a)
" "	"	fatty acid	D	7.3	"
Seaweed *Phaedactylum tricornutum*	"	lipid	D	(3.6-4.8)	"
Green alga *Plocamium coccineum*	Great Britain		D	10.0	Jones (1922)
Red alga *Poryphyra sp.*	Nova Scotia		D	0.0	Young & Langille (1958)
Seaweed *Pterygophera californica*	United States		D	12.0	Williams & Whetstone (1940)
Seaweed *Rhodemia pertusa*			D	1.0	"
Red alga *Rhodymenia palmata*	Nova Scotia		D	10.0	Young & Langille (1958)
Sargassum weed *Sargassum filipendula*	Florida		W	5.8	Johnson & Braman (1975)
Sargassum weed *Sargassum fluitans*	"		W	19.5	"
Sargassum weed *Sargassum spp.*	"		D	(4.2-12.7)	"
Red alga *Sphaerococcus coronopifolius*			D	4.0	(1913) in Vinogradov (1953)

Green alga *Spongomorpha arcta*	Nova Scotia	D	8.0	Young & Langille (1958)
Green alga *Ulva lactuca*	"	D	4.0	"
" "		D	0.15?	(1911) in Vinogradov (1953)
Green alga *Ulva sp.*	Japan	D	1.2	Fukai & Meinke (1962)
" "	"	A	5.4	"
Green alga *Ulva latissima*	Great Britain	D	8.0	Jones (1922)
Undaria pinnatifida	Japan	D	(29.0-72.0) 42.0	Shimokawa et al. (1971)
Red alga *Wrangelia penicillata*		D	4.0	(1913) in Vinogradov (1953)
"Seaweed"	"	D	(13.0-33.0) 24.0	Shimokawa et al. (1971)
"Agar"	"	D	<0.1	"
"Green laver"	"	D	(0.4-0.9)0.6	"
"Tangleweed"	"	D	(29.0-91.0)49.0	"

BERYLLIUM IN ANIMALS (1)

Species	Locality	Tissue	Analysis (2) PPM	Authority
MAMMALS				
Cow *Bos bovis*	Australia	milk	A (ND-0.09) 0.02	Meehan & Smythe (1967)
" "		liver	A 0.05±SD 0.003	Owens & Gladney (1975)
Harbor seal *Phoca vitulina*	Great Britain	spleen	W<0.005	Hamilton (1976)
" "	"	heart	W <0.03	"
" "	"	muscle	W 0.02±0.009	"
" "	"	kidney	W <0.04	"
" "	"	liver	W <3.0	"
Rat *Rattus rattus*		Be is deposited in bone and some in liver, spleen, kidneys and muscle.		Taylor and Arnold (1971)

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BIRDS

Mallard *Anas platyrhynchos*	New York	liver		<1.0	Baker et al. (1976)
" "	"	muscle		<1.0	"
" "	Canada	feather	D	<0.5	Kelsall (1970)
Black duck *Anas rubripes*	New York	liver		<1.0	Baker et al. (1976)
" "	"	muscle		<1.0	"
" "	Canada	feather	D	<0.5	Kelsall (1970)
White-fronted goose *Anser albifrons*	"	"		<0.5	"
Lesser scaup *Aythya affinis*	"	"		<0.5	"
Greater scaup *Aythya marila nearctica*	New York	liver		<1.0	Baker et al. (1976)
" " "	"	muscle		<1.0	"
" " "	"	brain		<1.0	"
Canvasback *Aythya valisneria*	"	liver		<1.0	"
" "	"	muscle		<1.0	"
Canada goose *Branta canadensis*	"	liver		<1.0	"
" "	"	muscle		<1.0	"
" "	"	brain		<1.0	"
" "	Washington	egg	A	ND (Be^7)	Richard & Sweany (1977)
" "	"	shell	A	ND "	"

Bufflehead *Bucephala albeola*	New York	liver		<1.0	Baker et al. (1976)
" "	"	muscle		<1.0	"
Chicken *Gallus domesticus*	Australia	egg yolk	A	0.01	Meehan & Smythe (1967)
" "	"	egg white & yolk	A	0.006	"
" "	"	egg shell & yolk	A	0.014	"
White-winged scoter *Melanitta deglandi*	New York	liver		<1.0	Baker et al. (1976)
" "	"	muscle		<1.0	"
FISH					
Bream *Acanthopagrus sp.*	Australia	gut	A	0.1	Meehan & Smythe (1967)
" "	"		A	ND	"
Blackfish *Girella tricuspidata*	"	whole	A	(0.08-0.39) 0.23	"
" "	"	gut	A	(0.46-1.78) 0.99	"
" "	"	muscle	A	0.01	"
Guppy *Lebistes reticulatus*		highest Be conc. in viscera and intestine and kidney and ovary. (exposed to ^{7}Be)			Slonim & Damm (1972)
Eel *Leptocephalus sp.*?	"		A	ND	Meehan & Smythe (1967)

Mullet *Mugil cephalus*?	Australia	whole	A	(0.03-0.36)0.21	Meehan & Smythe (1967)
" "	"	gut	A	(0.04-0.71)	"
" "	"	muscle	A	(ND-0.07)0.04	"
Leatherjacket *Navodon sp.*	"	gut	A	(0.48-0.63)0.56	"
Bonito *Sarda chiliensis*?	"	muscle	A	0.01	"
"Redfin"	"	"	A	0.01	"
INVERTEBRATES					
Jelly blubber *Catostylus mosaicus*	"		A	ND	"
American oyster *Crassostrea virginica*	Texas	shell	D	<0.1	Smith & Wright (1962)
Oyster *Crassostrea sp.* & *Ostrea sp.*	Australia	"flesh"	A	(0.01-0.27) 0.03	Meehan & Smythe (1967)
" "	"	"liquid"	A	(0.01-0.03)0.02	"
" "	"	shell	A	(0.01-0.08)0.04	"
Scallop, Tasmanian *Pecten novaezelandiae*			A	0.02	"
Cunjevoi, tunicate *Pyura stolonifera*	"	"flesh"	A	(0.10-0.53)	"
" "	"	tunic	A	(0.05-0.30)	"
"Shellfish"	"	"flesh"	A	(0.07-1.15)	"
"	"	shell	A	(ND-0.01)	"
Marine crab			A	(0.07-0.17)	"
Green prawn			A	0.03	"

Starfish	Australia	whole	A	0.02	Meehan & Smythe (1967)
"Plankton"	"		A	ND	"

BERYLLIUM IN HIGHER PLANTS (1)

Species	Locality	Tissue	Analysis PPM (2)		Authority
Acacia *Acacia sp.*	Australia		A	(0.10-1.06) 0.46	Meehan & Smythe (1967)
Peanut *Arachis hypogaea*	"	nut	A	(0.01-0.03) 0.02	"
" "	"	shell	A	(0.41-0.52) 0.47	"
Sagebrush *Artemisia sp.*	Russia		A	(0.01-0.50)	Mursaliev (1969)
Birch *Betula sp.*	"	Be indicator plant	A	3.0 (max.)	Nickonova (1967)
Cabbage *Brassica oleracea capitata*	Australia	head	A	0.03	Meehan & Smythe (1967)

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Hickory Carya spp.		Best Be accumulator plant known			Griffitts et al. (1977)
" "		leaf	D	1.0	"
" "		"	A	30.0	"
Dogwood Cornus sp.		"	D	>0.1	"
" "		"	A	>1.0	"
Cedar Juniperus communis	Missouri	needle & twig	D	<0.12	Connor et al. (1970)
Lettuce, green Lactuca sativa	W. Germany	head	D	0.33	Zorn & Diem (1974)
Lupine Lupinus sp.	Australia	seed	A	0.02	Meehan & Smythe (1967)
Tomato Lycopersicon esculentum	"	fruit	A	0.02	"
" "	W. Germany	"	D	0.24	Zorn & Diem (1974)
Alfalfa Medicago sativa	United States	(Grown in nutrient soln. with 16 ppm Be)			Romney & Childress (1965)
" "	"	leaf & stem	D	27.6	"
Tobacco Nicotiana tabacum	W. Germany	per cigarette	D	(0.47-0.74)	Zorn & Diem (1974)
Rice Oryza sativa	"	grain (polished)	D	0.08	"
Bean Phaseolus vulgaris	Australia	bean	A	(ND-0.01) 0.01	Meehan & Smythe (1967)

Engleman spruce *Picea engelmanni*	Colorado & Idaho		A	<1.0	Griffitts et al. (1977)
Lodgepole pine *Pinus contorta*	"		A	<1.0	"
Pine *Pinus sp.*	Russia	Be indicator plant	A	3.0 (max.)	Nickonova (1967)
Almond *Prunus amygdalus*	Australia	nut	A	0.01	Meehan & Smythe (1967)
" "	"	shell	A	0.01	"
Douglas fir *Pseudotsuga taxifolia*	Colorado & Idaho		A	<1.0	Griffitts et al. (1977)
Pea *Pisum sativum*	California	(grown in nutrient soln. with 16 ppm Be)			Romney & Childress (1965)
" "		leaf & stem	D	75.3	"
Aspen *Populus sp.*	Russia	Be indicator plant	A	3.0 (max.)	Nickonova (1967)
Willow *Salix sp.*	"	"	A	3.0 (max.)	"
Potato *Solanum tuberosum*	W. Germany	tuber	D	0.17	Zorn & Diem (1974)
Spanish moss *Tillandsia usnoides*	United States	whole	A	2.0	Shacklette & Connor (1973)
Ladino clover *Trifolium sp.*	California	(grown on Be-treated kaolin soil)			Romney & Childress (1965)

Corn *Zea mays*	France (with $BeSO_4$ supplement)				Oustrin et al. (1967)
" "	" "	shoot	A	(2.4-2.8)	"
" "	" "	root	A	(2.7-2.8)	"
" "	" "	ear	A	(8.1-15.7)	"
Eel grass *Zostera sp.*	Australia	whole	A	(0.28-1.12) 0.60	Meehan & Smythe (1967)
"Angiosperms"	"		A	(0.15-2.00) 0.69	"
"Conifers"			D	0.1	Griffitts et al. (1977)
"			A	1.0	"
Desert shrubs	S.W. United States (desert)		More Be in twigs than leaves		"
"Vegetation"			A	<2.0	Cannon (1960)
"Orchard leaves"			A	(0.030-0.067)	Owens & Gladney (1975)

BERYLLIUM IN LOWER PLANTS (1)

Species	Locality	Tissue	Analysis (2) PPM	Authority
MOSSES				
"Bryophytes"	in specimens containing Be (26.3% contain Be)		A 6.0	Shacklette (1965)
LICHENS				
Lecanora rubina	Colorado	whole	<1.0	Leroy & Koksoy (1962)
Parmelia conspersa	"	"	<1.0	"
Parmelia saxatilis		"	A (0.0-trace)	Fearon (1935)
Umbilicaria hyperborea	"	"	(1.0-3.0)	Leroy & Koksoy (1962)
Xanthoria elegans	"	"	<1.0	"
Xanthoria parietina		"	A (0.0-trace)	Fearon (1935)

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FUNGI					
"Mushrooms"	Australia	whole	A	0.12	Meehan & Smythe (1967)
Yeast, bakers	"	"	A	0.02	"
ALGAE					
"Rockweed algae"	"	"	A	(0.02-0.54) 0.28	"
"	"	"	A	0.01	"
"Seaweed"	"	"	A	(0.29-1.02) 0.66	"
"Bubbleweed"	"	"	A	(0.01-0.05) 0.03	"

BORON IN MAMMALS(1)

Species	Locality	Tissue	Analysis(2) PPM	Authority
Harbor Seal _Phoca_ _vitulina_	Great Britain	blood	W 2.0 ±0.4	Hamilton (1976)
" "	"	spleen	W 0.5±0.2	"
" "	"	heart	W 0.1±0.05	"
" "	"	muscle	W 0.3±0.1	"
" "	"	kidney	W 0.01±0.01	"
" "	"	liver	W 0.2±0.1	"
"Mammals"		brain	D 0.6	Bowen (1966)
"		heart	D 0.2	"
"		kidney	D 0.5	"
"		liver	D 0.48	"
"		lung	D 0.24	"
"		muscle	D 0.31	"
"		skin	D 0.2	"
"		bone	D 5.0	"

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BORON IN FISH(1)

Species	Locality	Tissue	Analysis(2) PPM	Authority
Atlantic herring *Clupea harengus*			D 3.0	Vinogradov (1953)
" "			W 1.5	"
Anchovetta *Engraulis ringens*	California	whole	A (3.3-3.8)	Goldberg (1962)
Atlantic cod *Gadus morhua*			D 57.6	Vinogradov (1953)
" "			W 1.83	"
" "		immature	D 1.5	"
Lepadogaster gouanii			D 100.0 (ppm of sum of ash cations)	"
Haddock *Melanogrammus aeglefinus* (=*Gadus aeglefinus*)			D 17.5	"
" "			W 3.45	"

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Yellowfin tuna Neothunnus macropterus	California	heart	A	1.5	Goldberg (1962)
" "	"	spleen	A	3.3	"
" "	"	stomach	A	150.0	"
" "	"	blood	A	1.5	"
" "	"	eyeball	A	5.6	"
" "	"	muscle	A	39.0	"
" "	"	gill	A	1.8	"
" "	"	whole	A	9.0	"
Pollock Pollachius virens (=Gadus virens)			D	6.32	Vinogradov (1953)
" "			W	1.3	"
" "		immature	D	35.9	"
" "		"	W	6.24	"
Lake trout Salvelinus namaycush	New York	muscle	W	(0.25-0.63)	Tong et al. (1974)
Albacore Thunnus alalunga	California	heart	A	33.0	Goldberg (1962)
" "	"	liver	A	82.0	"
" "	"	pyloric caeca	A	33.0	"
" "	"	gill	A	1.6	"
" "	"	hyoid bone	A	1.0	"
" "	"	skin	A	2.7	"
" "	"	muscle	A	(11.0-13.0)	"
" "	"	bone	A	(1.0-1.4)	"

BORON IN MOLLUSCA(1)

Species	Locality	Tissue	Analysis(2) PPM	Authority
Pteropod *Clione limacina*	N.E. United States	whole	A 90.0	Nicholls et al. (1959)
American oyster *Crassostrea virginica*	Texas	shell	D 5.0	Smith & Wright (1962)
Pteropod *Limacina retroversa*	N.E. United States		A 50.0	Nicholls et al. (1959)
Squid *Ommastrephes illicebrosa*	"		A 420.0	"
"Mollusca"			D 20.0	Bowen (1966)
"		hard tissue	D 3.0	"

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BORON IN CRUSTACEA (1)

Species	Locality	Tissue	Analysis (2) PPM	Authority
Common barnacle Balanus balanoides			W 2.43	Vinogradov (1953)
" "			D 18.6	"
Copepod Calanus finmarchius	Barents Sea		W 9.52	"
" "	"		D 71.6	"
" "	N.E. United States	whole	A 760.0	Nicholls et al. (1959)
" " (+ phytoplankton)	"		A 325.0	"
" "	"		D 134.0	"
Hermit crab Eupagurus bernhardus	Great Britain		D 100.0	Webb (1937)
Copepod Centropagus hamatus	N.E. United States	whole	A 160.0	Nicholls et al. (1959)
Beach flea Gammarus locusta			W 14.5	Vinogradov (1953)
" "			D 71.4	"

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Shrimp *Palaemon sp.*			W	2.5	Vinogradov (1953)
" "			D	11.3	"
Spiny lobster *Panulirus sp.*			W	2.5	"
" "			D	11.3	"
Freshwater crayfish *Potamobius fluviatilis*			W	9.03	"
" "			D	31.3	"
Euphausid *Euphausia krohnii*	N.E. United States	whole	A	440.0	Nicholls et al. (1959)
"Crustacea"			D	15.0	Bowen (1966)

BORON IN LOWER ANIMALS(1)

Species	Locality	Tissue	Analysis PPM(2)	Authority
ECHINODERMATA				
Sea star *Asterias rubens*	Great Britain		D 1,500.0	Webb (1937)
Sea urchin *Echinus esculentus*	"		D 300.0	"
Sea star *Marthasterias glacialis*	Sweden		D 300.0	Noddack & Noddack (1940)
Brittlestar *Ophiocomina nigra*	Great Britain	disc, arm	D 800.0	Webb (1937)
Sea urchin *Paracentrotus lividus*	"	ovary	D 100.0	"
" "	"	coclomic fluid	D 300.0	"
"Echinodermata"			D 46.0	Bowen (1966)
"		hard tissue	D 30.0	"
COELENTERATA				
Coral *Anomocora fecunda*	Jamaica		D 70.0	Livingston & Thompson (1971)

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Coral *Bathycyanthus maculatus*	Jamaica	D	80.0	Livingston & Thompson (1971)
Coral *Caryophyllia clavus*	"	D	65.0	"
Coral *Caryophyllia communis*	"	D	50.0	"
Coral *Cladocera patriarca*	"	D	95.0	"
Jellyfish *Cyanaea capillata*	N.E. United States	A	100.0	Nicholls et al. (1959)
Coral *Dendrophyllia sp.*	Jamaica	D	100.0	Livingston & Thompson (1971)
Coral *Desmophyllum cristogalli*	"	D	(65.0-75.0)	"
Coral *Madracis asperula*	"	D	95.0	"
Coral *Madracis mirabilis*	"	D	(80.0-90.0)	"
Coral *Madracis pharensis*	"	D	80.0	"
Coral *Meandrina areolata*	"	D	110.0	"
Coral *Meandrina braziliensis*	"	D	(55.0-70.0)	"
Coral *Montastrea annularis*	"	D	(50.0-65.0)	"
Coral *Phyllangia americana*	"	D	60.0	"
Coral *Porites porites*	"	D	(40.0-50.0)	"
Coral *Scolmia cubensis*	"	D	(60.0-80.0)	"

Coral *Solenosmilia variabilis*	Jamaica		D	(65.0-80.0)	Livingston & Thompson (1971)
Coral *Trochocyanthus sp.*	"		D	85.0	"
PORIFERA					
Sponge *Aphrocallistes bocageia*		in spongin skeleton	A	1,000.0	Vinogradov (1953)
Sponge *Spongia sp.*?		"	A	5,000.0	"
NEMERTEA					
Lineus longissimus			A	500.0	Webb (1937)
ANNELIDA					
Polychaete *Nephthys sp.*			A	1,000.0	"
Annelida			D	2.1	Bowen (1966)
CHAETOGNATHA					
Arrow worm *Sagitta elegans*	N.E. United States	whole	A	130.0	Nicholls et al. (1959)
CTENOPHORA					
Comb jelly *Beroe cucumis*	"	"	A	115.0	"
TUNICATA					
Tunicate *Salpa fusiformis*	"	"	A	50.0	"
FORAMINIFERA		hard tissue	D	500.0	Bowen (1966)

BORON IN HIGHER PLANTS (1)

Species	Locality	Tissue	Analysis (2) PPM	Authority
Pickel weed *Allenrolfea sp.*	Russia	Absorbs large quantities of B in desert basin brines. Used for prospecting for B.		Buyalov & Shvyryayeva (1961)
Sagebrush *Artemisia tridentata*	Nevada Greenhouse	leaf	D 73.0	Wallace & Romney (1972)
" "	" "	stem	D 20.0	"
" "	" (on high B soil)	leaf	D (45.0-62.0)	"
" "	" "	stem	D (21.0-54.0)	"
" "	" "	leaf	D (37.0-74.0)	"
" "	" "	whole	D (134.0-250.0)	"
" "	" "	leaf	D (87.0-156.0)	"
Locoweed *Astragalus lentiginosus*	" greenhouse	leaf	D 107.0	"
" "	" "	stem	D 46.0	"

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Saltbush *Atriplex*	*canescens*	Nevada greenhouse	stem	D	14.0	Wallace & Romney (1972)
"	"	" "	leaf	D	40.0	"
"	"	" (on high B soil)	"	D	(52.0-62.0)	"
"	"	" (nutrient soln.)	"	D	(23.0-40.0)	"
"	"	" "	stem	D	(9.0-19.0)	"
"	"	" "	root	D	(3.0-21.0)	"
"	"	" (field grown)	leaf	D	(60.0-106.0)	"
"	"	" (with salts)	"	D	(234.0-680.0)	"
"	"	" "	stem	D	(41.0-94.0)	"
"	"	" "	root	D	(49.0-129.0)	"
Saltbush *Atriplex*	*confertifolia*	" greenhouse	leaf	D	37.0	"
"	"	" "	stem	D	14.0	"
"	"	" (nutrient soln.)	leaf	D	(14.0-32.0)	"
"	"	" "	stem	D	(27.0-46.0)	"
"	"	" "	root	D	(14.0-23.0)	"
"	"	"	cutting	D	(109.0-160.0)	"
"	"	" (grown on soil)	leaf	D	(40.0-90.0)	"
"	"	" (low salt)	"	D	(39.0-41.0)	"
"	"	" (high salt)	"	D	(36.0-43.0)	"

Saltbush *Atriplex hymenelytra*	Nevada greenhouse	leaf	D	46.0	Wallace & Romney (1972)
" "	" "	stem	D	24.0	"
" "	" (in NaCl)	leaf	D	(27.0-46.0)	"
" "	" "	stem	D	(14.0-25.0)	"
" "	" "	root	D	13.0	"
" "	" (field grown)	leaf	D	(192.0-1,588.0)	"
" "	" (in B solns.)	root	D	(39.0-61.0)	"
" "	" "	stem	D	(23.0-103.0)	"
" "	" "	leaf	D	(22.0-155.0)	"
Saltbush, desert holly *Atriplex polycarpa*	" greenhouse	"	D	93.0	"
" "	" "	stem	D	12.0	"
Swiss chard *Beta vulgaris cicla*	Maryland	leaf	D	(38.0-40.0)	Furr et al. (1976)
" " "	" (on sludge-amended soil)	"	D	(40.0-42.0)	"
Watershield *Brasenia schreberi*	Pennsylvania	whole	D	35.0	Adams et al. (1973)
Cabbage *Brassica oleracea capitata*	Maryland (control)		D	21.0	Furr et al. (1977)
" " "	" (grown in soil & fly ash)		D	(16.0-145.0)	"
Hickory *Carya spp.*	Tennessee	branch	D	(7-70)	Van Hook et al. (1974)
Hornwort *Ceratophyllum demersum*	Pennsylvania	whole	D	(25.0-62.0)	Adams et al. (1973)

Rabbit brush Chrysothamnus nauseosus	Nevada greenhouse	leaf	D	189.0	Wallace & Romney (1972)
" "	" "	stem	D	22.0	"
Rabbis brush Chrysothamnus viscidiflorus	" "	leaf	D	178.0	"
" "	" (field)	stem	D	52.0	"
Blackbrush Coleogyne ramosissima	"	leaf	D	(22.0-50.0)	"
" "	"	stem	D	(13.0-49.0)	"
" "	" (grown on high B soil)	leaf	D	(44.0-78.0)	"
Dodder Cuscuta nevadensis	"	whole	D	(24.0-30.0)	"
Tansy mustard Descurainia pinnata	" greenhouse	top	D	61.0	"
Needle spike rush Eleocharis acicularis	Pennsylvania	whole	D	(25.0-60.0)	Adams et al. (1973)
Blunt spike rush Eleocharis obtusa	"	"	D	(18.0-20.0)	"
Waterweed Elodea canadensis	"	"	D	(22.0-44.0)	"
Waterweed Elodea nuttalli	"	"	D	(35.0-45.0)	"
Mormon tea Ephedra funerea	Nevada	shoot	D	(12.0-14.0)	Wallace & Romney (1972)
Mormon tea Ephedra nevadensis	"	"	D	(9.0-55.0)	"
Mormon tea Ephedra torreyana	"	"	D	(21.0-28.0)	"

Mormon tea *Ephedra viridis*	Nevada	shoot	D	(15.0-29.0)	Wallace & Romney (1977)
Winterfat *Eurotia ceratoides*	Russia	Used for prospecting for B			Buyalov & Shvyryayeva (1961)
Winterfat *Eurotia lanata*	Nevada greenhouse	leaf	D	101.0	Wallace & Romney (1972)
" "	" "	stem	D	9.0	"
" "	" (grown in field)	leaf	D	(43.0-104.0)	"
" "	" (high B soil)	"	D	(154.0-278.0)	"
" "	" (in field)	"	D	(49.0-279.0)	"
" "	" "	stem	D	(17.0-28.0)	"
Burro bush *Franseria dumosa*	" greenhouse	leaf	D	353.0	"
" "	" "	stem	D	30.0	"
" "	" (in high B soil)	plant	D	(209.0-314.0)	"
" "	" (field)	leaf	D	(31.0-362.0)	"
" "	" (in solns. of B)	root	D	(70.0-270.0)	"
" "	" "	stem	D	(22.0-401.0)	"
" "	" "	leaf	D	(53.0-973.0)	"
" "	" (field)	"	D	178.6±SD 65.1	"
" "	" "	stem	D	46.0±SD 19.5	"

Spiny hop sage *Grayia spinosa*	Nevada (grown in field)	leaf	D	(43.0-96.0)	Wallace & Romney (1972)
" "	" (in high B soil)	"	D	(36.0-76.0)	"
" "	" (field)	"	D	(28.5-36.5)	"
" "	" "	stem	D	(14.2-20.6)	"
" "	" "	leaf	D	50.4±SD 18.1	"
" "	" "	stem	D	24.2±SD 9.3	"
Creeping Saint Johns wort *Hypericum adpressum*	Pennsylvania	whole	D	18.0	Adams et al. (1973)
Riverbank quillwort *Isoetes riparia*	"	"	D	26.3	"
Bog rush *Juncus effusus*	"	"	D	(11.3-22.3)	"
Rush *Juncus sp.*	Russia	absorbs large quantities of B, used for prospecting			Buyalov & Shvyryayeva (1972)
Juniper *Juniperus osteosperma*	Nevada	leaf	D	24.0	Wallace & Romney (1972)
Cedar *Juniperus virginianus*	Missouri	branch	D	(14.0-16.0)	Connor et al. (1970)
Krameria *Krameria parvifolia*	Nevada	leaf	D	(49.0-86.0)	Wallace & Romney (1972)
" "	"	stem	D	(18.0-43.0)	"
Larch *Larix occidentalis*	United States	Used for prospecting for B			Carlisle & Cleveland (1958)

Creosote bush *Larrea divaricata*	Nevada greenhouse	leaf	D	66.0	Wallace & Romney (1972)
" "	" "	stem	D	10.0	"
" "	" (field grown)	leaf	D	(68.0-192.0)	"
" "	" (in high B soil)	shoot	D	(56.0-205.0)	"
" "	" (field)	leaf	D	(52.8-156.0)	"
" "	" "	stem	D	(24.7-69.0)	"
Statice *Limonium suffruticosum*	Russia	Used for prospecting for B			Buyalov & Shvyryayeva (1961)
Tulip poplar *Liriodendron tulipifera*	Tennessee	branch	D	(5-10)	Van Hook et al. (1974)
Ludwigia *Ludwigia palustris americana*	Pennsylvania	whole	D	31.3	Adams et al. (1973)
Box thorn *Lycium andersonii*	Nevada greenhouse	leaf	D	163.0	Wallace & Romney (1972)
" "	" "	stem	D	7.0	"
" "	" (field)	"	D	(9.0-26.0)	"
" "	" "	leaf	D	(57.0-123.0)	"
" "	" (grown in high B soil)	"	D	(33.0-93.0)	"
" "	" (in nutrient solns.)	"	D	(26.0-131.0)	"
" "	" "	stem	D	(9.0-19.0)	"
" "	" "	root	D	(25.0-74.0)	"
" "	" (field)	leaf	D	83.4±SD 23.7	"
" "	" "	stem	D	24.3±SD 12.6	"

Boxthorn *Lycium pallidum*	Nevada (field)	leaf	D (60.0-100.0)	Wallace & Romney (1972)
" "	" (in high B soil)	"	D (74.0-201.0)	"
" "	" (field)	"	D 63.9±SD 12.7	"
" "	" "	stem	D 22.9±SD 9.9	"
Boxthorn *Lycium shockleyi*	" "	leaf	D (44.0-50.0)	"
Sweet clover *Melilotus sp.*	United States	Used for prospecting for B		Carlisle & Cleveland (1958)
Water milfoil *Myriophyllum brasiliense*	Pennsylvania	whole	D 36.0	Adams et al. (1973)
Water milfoil *Myriophyllum exalbescens*	"	"	D (25.0-42.0)	"
Water milfoil *Myriophyllum farwelli*	"	"	D 53.6	"
Threadlike naias *Naias gracillima*	"	"	D 45.6	"
Yellow pond lily *Nuphar advena*	"	"	D 31.0	"
Yellow pond lily *Nuphar variegatum*	"	"	D (23.0-30.0)	"
White water lily *Nymphaea tuberosa*	"	"	D 30.3	"
Indian rice grass *Oryzopsis hymenoides*	Nevada greenhouse	top	D 78.0	Wallace & Romney (1972)
" "	" (field)	leaf	D (37.0-42.0)	"
Reed canarygrass *Phalaris arundinacea*	Pennsylvania	whole	D 11.3	Adams et al. (1973)
Lodgepole pine *Pinus contorta*	United States	Used for prospecting for B		Carlisle & Cleveland (1958)

Shortleaf pine *Pinus echinata*	Tennessee	branch	D	(3-50)	Van Hook et al. (1974)
Riverweed *Podostemon ceratophyllum*	Pennsylvania	whole	D	44.3	Adams et al. (1973)
Knotweed *Polygonum amphibium stipulaceum*	"	"	D	47.6	"
Aspen *Populus tremuloides*	United States	Used for prospecting for B			Carlisle & Cleveland (1958)
Black cottonwood *Populus trichocarpa*	"	"			"
Pondweed *Potamogeton amplifolius*	Pennsylvania	whole	D	35.6	Adams et al. (1973)
Pondweed *Potamogeton crispus*	"	"	D	(18.0-50.0)	"
Pondweed *Potamogeton epihydrus muttellii*	"	"	D	(51.6-56.0)	"
Pond weed *Potamogeton filiformis borealis*	"	"	D	141.0	"
Pond weed *Potamogeton gramineus*	"	"	D	41.6	"
Pond weed *Potamogeton illinoensis*	"	"	D	(30.0-55.0)	"
Sago pondweed *Potamogeton pectinatus*	"	"	D	170.0	"
Pond weed *Potamogeton richardsonii*	"	"	D	38.0	"
Pond weed *Potamogeton robbinsii*	"	"	D	40.6	"
Pond weed *Potamogeton zosteriformis*	"	"	D	(33.0-34.0)	"

Chestnut oak *Quercus prinus*	Tennessee	branch	D	(20-80)	Van Hook et al. (1974)
Buttercup *Ranunculus longirostris*	Pennsylvania	whole	D	53.0	Adams et al. (1973)
Arrowhead *Sagittaria subulata*	"	"	D	(50.6-67.3)	"
Glasswort *Salicornia herbacea*		Severe changes occur in plants growing on high B soils, used for prospecting for B			Cannon (1971)
Saltwort *Salsola nitraria*	Russia	Used as B indicator plant in prospecting. Grows in soils with up to 36% B.			Buyalov & Shvyryayeva (1961)
Lizards tail *Saururus cernuus*	Pennsylvania	whole	D	57.0	Adams et al. (1973)
Three-square *Scirpus americanus*	"	"	D	16.3	"
Great bulrush *Scirpus validus creber*	"	"	D	16.3	"
Soolpolallie *Shepherdia canadensis*	United States	Used for prospecting for B			Carlisle & Cleveland (1958)
Squirreltail *Sitanion hystrix*	Nevada	top	D	28.0	Wallace & Romney (1972)
Bur-reed *Sparganium americanum*	Pennsylvania	whole	D	(18.0-70.0)	Adams et al. (1973)
Globe mallow *Sphaeralcea ambigua*	Nevada	leaf	D	(89.8-159.0)	Wallace & Romney (1972)
" "	"	stem	D	(13.5-24.7)	"

Wire grass Sporobolus spp.	United States	B detected in all samples in salt sick, marginal & healthy areas.		Rusoff (1937)
Stanleya Stanleya pinnata	Nevada	leaf	D 57.0	Wallace & Romney (1972)
Spanish moss Tillandsia usneoides	United States	whole	A (70.0-300.0) geom. mean 150.0	Shacklette & Connor (1973)
Cattail Typha latifolia	Pennsylvania	"	D (15.0-30.0)	Adams et al. (1973)
Bladderwort Utricularia vulgaris	"	"	D 37.6	"
Eel grass Vallisneria americana	"	"	D (38.0-55.0)	"
Speedwell Veronica scutellata	"	"	D 42.6	"
Yucca Yucca brevifolia	Nevada	leaf	D (11.0-21.0)	Wallace & Romney (1972)
" "	" (grown in high B soil)	shoot	D (38.0-46.0)	"
Yucca Yucca schidigera	" greenhouse	top	D 31.0	"
" "	" (grown in high B soil)	shoot	D (26.0-108.0)	"
" "	"	whole	D (20.0-25.0)	"
" "	" (seedling)	top	D 30.0	"
" "	" "	root	D 11.0	"
" "	" (irrad. & grown in high B soil)	shoot	D (37.0-321.0)	"

"Plants"		A	400	Vinogradov (1953)
Ave. of over 100 sp. of plants	growing on unmineralized ground	A	700	Cannon (1960)
"Plants"	Florida	Present in all species of plants tested.		Carrigan & Rogers (1940)
Pteridophytes		D	77.0 (ave.)	Bowen (1966)
Gymnosperms		D	63.0 "	"
Angiosperms		D	50.0 "	"

BORON IN ALGAE (1)

Species	Locality	Tissue	Analysis (2) PPM	Authority
Ascophyllum nodosum *Fucus serratus* *Fucus vesiculosus*			D to 100.0	Oy (1940)
"Marine algae" 5 species			D (4.2-14.9)	Igelsrud et al. (1938)
"Red algae"		hard tissue	D 60.0	Bowen (1966)
"Brown algae"			D 120.0	"
OTHER PLANTS				
Bacteria			D 5.5 (ave.)	"
Fungi			D 5.0 "	"
Bryophytes			D 20.0 "	"

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(1) Blank spaces indicate information not available or not applicable. ? indicates questionable data.

(2) W, D or A indicates on a Wet, Dry or Ashed basis. A single number indicates a single determination or mean. (x-y) indicates range of values, followed by the mean. ± Standard deviation (SD), standard error (SE), median, and geometric mean are indicated as reported. pCi/g = picocuries per gram.

CADMIUM IN MAMMALS(1)

Species	Locality	Tissue	Analysis(2) PPM	Authority
Moose *Alces alces gigas*	Alaska	hair	D (0.2-1.6) 0.8	Flynn et al. (1975)
" " "	"	"	Cd was 2 X higher in July-Oct. than Nov.-June in 3-yr. period	"
" " "	"	hair	D (1.0-1.4)	Flynn & Franzmann (1974)
" " "	"	hoof	D (0.7-0.8)	"
Longtailed field mouse *Apodemus sylvaticus*	Great Britain	liver	W (<0.01-0.28)	Jefferies & French (1976)
" "	" "	kidney	W (<0.01-0.77)	"
" "	" "	testes	W (<0.01-6.34)?	"
" "	" "	whole body	W (0.06-0.14)	"
Short-tailed shrew *Blarina brevicauda*	New Hampshire	" "	W 0.4±SD 0.01	Schiesinger & Potter (1974)

(1) Blank spaces indicate information not available or not applicable. ? indicates questionable data.

(2) W, D or A indicates on a Wet, Dry or Ashed basis. A single number indicates a single determination or mean. (x-y) indicates range of values, followed by the mean. ± Standard deviation (SD), standard error (SE), median, and geometric mean are indicated as reported. pCi/g = picocuries per gram.

Short-tailed shrew Blarina brevicauda	Ohio	leg	W	(0.07-0.63)	Curnow et al. (1977)
" "	"	liver	W	(ND-1.29)	"
Cow Bos bovis	Missouri	Cattle exposed to Cd from lead smelter and trucking Pb concentrate:			Dorn et al. (1974)
" "	"	exposed cattle on test farm:			
	"	fall, hair	W	1.29	"
" "	"	winter, "	W	1.74	"
" "	"	spring, "	W	2.80	"
" "	"	summer, "	W	0.67	"
" "	"	unexposed cattle on control farm:			
" "	"	fall, hair	W	0.06	"
" "	"	winter, "	W	0.13	"
" "	"	spring, "	W	0.05	"
" "	"	summer, "	W	0.04	"
" "	"	Cd in cattle hair in terminal summer sample was 12 X higher than control.			"
" "	Missouri dist. from smelter (km):				Dorn et al. (1973)
" "	" " 0.8	liver	W	0.9	"
" "	" " 72.4 (control)	"	W	0.24	"
" "	" " 0.8	kidney	W	3.7	"
" "	" " 72.4 (control)	"	W	1.4	"
" "	" " 0.8	diaphragm	W	0.1	"

Cow *Bos bovis*	Missouri dist. from smelter (km):				Dorn et al. (1973)
" "	" " 72.4 (control)	diaphragm	W	0.1	"
" "	" " 0.8	milk	W	(0.002-0.0042)	"
" "	" " 72.4 (control)	"	W	(0.003-0.0043)	"
" "	Montana (near Pb smelter)	milk	W	0.02	Lewis (1972)
" "	" "	patella bone	W	1.4	"
" "	" "	liver	W	0.2	"
" "	" "	muscle	W	0.4	"
" "	24.1 km from Zn smelter	liver	W	(0.2-0.43) 0.34	Munshower (1972)
" "	" " "	kidney	W	(1.03-2.31) 1.67	"
" "	" " "	liver	W	(0.33-1.4) 0.76	"
" "	" " "	kidney	W	(1.53-5.7) 3.04	"
" "	United States	"	W	(0.22-1.0)	Schroeder & Balassa (1961)
" "	" "	leg muscle	W	0.024	"
" "	" "	liver	W	(0.16-0.2)	"
" "	" "	milk	W	(0.017-0.030)	Murthy & Rhea (1968)
" "	Germany	kidney		(to 40.0)12.0	Kropf & Geldmacher (1968)

Cow Bos bovis	United States	milk	W	(0.017-0.041) 0.025 med.	Pinkerton et al. (1972)
" "	Romania	muscle	W	0.060	Rautu & Sporn (1970)
" "	Japan	"	W	0.054	Ishazaki et al. (1970)
" "	Texas	liver	W	0.22±SD 0.04	Horowitz & Presley (1977)
" "	Kansas	milk	W	(0.0013-0.0054)	Lagerwerff & Brower (1974)
" "	Japan	muscle	W	0.052	Yamagata & Shigematsu (1970)
" "	"	liver	W	0.22	"
" "	United States (1000 cattle)	liver	W	(0.02-3.17) 0.231	USDA (1971)
" "	" "	muscle	W	(0.01-0.90) 0.086	"
" "	" "	kidney	W	(0.01-7.82) 0.509	"
" "	Czechoslovakia	milk	W	0.01	Lener & Bibr (1970)
" "	Germany (control area)	kidney	W	4.7±SD 3.4	Anke et al. (1976)
" "	Germany (Cd emission area)	"	W	29.0±SD 22.0	"
" "	Washington, D. C.	milk	W	(0.0031-0.0048) 0.0044	Lagerwerff & Brower (1974)

Northern fur seal Callorhinus ursinus	Washington coast	kidney (fetus & 1 yr.)	W	(0.1-6.9)	Anas (1974)
" "	"	kidney (3-20 yr.)	W	(0.2-15.6)5.2	"
" "	"	liver (fetus & 1 yr.)	W	(0.5-0.9)	"
" "	"	liver (3-20 yr.)	W	(1.1-4.6)1.7	"
Dog Canis familiaris	Vermont	liver	W	0.59	Schroeder et al. (1967)
" "	"	kidney	W	1.47	"
Coyote Canis latrans	United States	"	W	0.36	"
Goat Capra americana	" "	"	D	2.7	Miller et al. (1969)
" "	" "	duodenum	D	2.5	"
" "	" "	liver	D	1.6	"
" "	Germany (fed 500 ppm Cd)	kidney (male)	W	853.0	Anke et al. (1976)
" "	" " "	kidney (female)	W	443.0	"
" "	" " "	liver (male)	W	84.0	"
" "	" " "	liver (female)	W	48.0	"
" "	" " "	heart muscle (male)	W	4.7	"
" "	" " "	heart muscle (female)	W	2.4	"

Roe deer *Capreolus capreolus*	Germany (Cd emission area)	kidney	W	32.0	Anke et al. (1976)
Guinea pig *Cavia porcellus*	United States	liver	D	(1.8-2.4)	Furr et al. (1976)
" "	" "	kidney	D	(6.2-10.6)	"
" "	" "	muscle	D	(0.05-0.1)	"
" "	" "	adrenal	D	(0.05-0.09)	"
" "	" "	spleen	D	(0.11-0.19)	"
" "	United States (control)	kidney	D	6.2	"
" "	United States (fed swiss chard grown on sludge fortified soil)	"	D	(7.4-10.6)	"
Elk *Cervus sp.*	Finland	liver	D	1.5	Jaakola et al. (1971)
" "	"	kidney	D	8.05	"
" "	"	muscle	D	0.59	"
Columbia ground squirrel *Citellus columbianus*	Montana	liver	W	(0.2-1.4)	Gordon (1972)
" "	"	kidney	W	(1.4-4.0)	"
Bank vole *Clethrionomys glareolus*	Great Britain	whole body	W	0.12	Jefferies & French (1976)
" "	" "	" "	D	0.45	"
" "	" "	liver	W	<0.01	"
" "	" "	kidney	W	0.72	"

Common dolphin Delphinus delphis	New Zealand	liver	W	(0.21-1.55)	Koeman et al. (1973)
Sea otter Enhydra lutris	California	kidney	D	(89.0-300.0)	in Anderlini (1974)
Horse Equus caballus	Montana (control)	mane	W	(0.2-0.6)0.3	Lewis (1972)
" "	Montana (near smelter)	"	W	(0.6-9.6)1.8	"
" "	Montana dist. from smelter (mi):				
" "	" " NE 2.9	"	W	9.0	"
" "	" " E 2.6	"	W	2.9	"
" "	" " SSE 1.0	"	W	2.4	"
" "	" " NW 1.4		W	2.2	"
" "	" " N 1.0	"	W	2.2	"
" "	" " W 3.0	"	W	1.7	"
" "	" " E 2.9	"	W	1.4	"
" "	" " NNW 1.9	"	W	1.3	"
" "	" " WNW 7.6	"	W	1.3	"
" "	" " E 4.7	"	W	1.0	"
" "	" Proximity of stacks of the smelter correlates with increased levels of Cd in horse manes and are consistent with Cd in soil and pasture grass.				"
" "	" 3 yr. old horse died, toxic levels of Cd:				"
" "	" " "	kidney	W	(228.0-410.0) 319.0	"
" "	" " "	bone	W	1.0	"

Horse Equus caballus	Montana 3 yr. old horse died, toxic levels of Cd:				Lewis (1972)
" "	" " "	liver	W	80.0	"
" "	" " "	spleen	W	4.1	"
" "	" " "	lung	W	(0.6-1.6)1.1	"
" "	" " "	heart	W	0.4	"
" "	" " "	flank muscle	W	3.9	"
" "	Wales (Smelter area)	kidney (normal)	W	35.0	Goodman & Roberts (1971)
" "	" "	liver (normal)	W	1.6	"
" "	" "	lung (normal)	W	<0.1	"
" "	" "	kidney (affected)	W	330.0	"
" "	" "	liver (affected)	W	7.5	"
" "	" "	lung (affected)	W	0.3	"
Porcupine Erethizon dorsatum	Vermont	heart	W	0.35	Schroeder et al. (1967)
Bearded seal Erignathus barbatus	Alaska	kidney	W	43.4±19.7	Buhler & Mate (1973)
" "	"	liver	W	11.1±10.2	"
" "	"	muscle	W	0.222±0.292	"

Gray seal _Halichoerus_ _grypus_	Oregon coast	kidney	W	22.0	Buhler et al. (1975)
" "	Great Britain		Cd accumulated with age in kidney		Heppleston & French (1973)
Dusky dolphin _Lagenomorphus_ _obscurus_	New Zealand	liver	W	(0.21-1.55)	Koeman et al. (1973)
Woodchuck _Marmota_ _monax_	Ohio	liver	W	ND	Lynch (1973)
Field vole _Microtus_ _agrestis_	Sweden (smelter area)	kidney	D	(0.17-3.9)1.09	Westermark et al. (1974)
Mouse _Mus_ _musculus_	Sweden	hair (44 days after injection of Cd)	W	0.00011± 0.00005	Nordberg & Nishiyami (1972)
" "	"	hair (112 days after injection of Cd)	W	0.00007± 0.000033	"
" "	United States	commercial grown, kidney	W	0.01-0.3	Schroeder et al. (1964)
" "	" "	controls, kidney	W	0.0	"
Weasel _Mustela_ _nivalis_	Montana	kidney	W	1.87	Munshower (1972)
Mink _Mustela_ _vison_	Ohio	leg bone	W	ND	Lynch (1973)
White-tailed deer _Odocoilus_ _virginiensis_	Vermont	kidney	W	2.07	Schroeder et al. (1967)

White-tailed deer *Odocoilus virginiensis*	Vermont	fat	W	0.12	Schroeder et al. (1967)
" "	"	brain	W	0.08	"
" "	Tennessee	kidney	W	(2.1-11.7)	Schroeder & Balassa (1961)
" "	"	liver	W	0.35-0.74)	"
" "	Ohio	"	W	(ND-0.39) 0.07	Devendorf (1975)
" "	"	muscle	W	(ND-0.32)0.02	"
" "	"	brain	W	0.12±0.17	Lynch (1973)
" "	"	kidney	W	0.7±0.74	"
" "	"	leg muscle	W	0.09±0.08	"
" "	"	liver	W	0.27±0.27	"
" "	"	leg bone	W	0.56±0.11	"
Domestic rabbit *Oryctolagus cuniculus*	Montana (near Pb smelter)	feral, liver	W	(3.9-5.8)5.1	Gordon (1972)
" "	" " "	feral, kidney	W	(19.0-61.0)35.6	"
" "	" " "	control, liver	W	0.1	"
" "	" " "	control, kidney	W	0.3	"
Sheep *Ovis aries*	United States	lamb kidney	W	0.14	Schroeder & Balassa (1961)
" "	" "	lamb liver	W	0.14	"

Sheep Ovis aries	United States	lamb muscle	W	0.015	Schroeder & Balassa (1961)
" "	Germany (non-smelter area)	kidney	W	(1.4-2.8)	Anke et al. (1976)
" "	" " "	liver	W	(0.51-0.72)	"
" "	Germany (smelter area)	kidney	W	(12.0-40.0)	"
" "	" "	liver	W	(2.8-3.5)	"
White-footed mouse Peromyscus leucopus	Ohio (strip mine area)	leg	W	(0.02-0.69) medians	Curnow et al. (1977)
" "	" " "	liver	W	(ND-1.1) medians	"
" "	Ohio (non-strip mine area)	leg	W	(0.12-0.4) medians	"
" "	" " "	liver	W	(0.02-0.22) medians	"
Deer mouse Peromyscus m. maniculatus	New England	whole body	W	0.4±SD 0.01	Schlesinger & Potter (1974)
Harbor seal Phoca vitulina richardi	California coast			(0.01-0.76) 0.116	Roberts et al. (1975)
Harbor seal, common seal Phoca vitulina	Netherlands			(0.05-0.3)	Koeman et al. (1973)
" "	Great Britain	blood	W	0.02±0.01	Hamilton (1976)
" "	" "	spleen	W	0.1±0.05	"
" "	" "	heart	W	0.03±0.01	"

Harbor seal, common seal *Phoca vitulina*	Great Britain	muscle	W	0.2±0.1	Hamilton (1976)
" "	" "	kidney	W	10.0±9.0	"
" "	" "	liver	W	0.8±0.7	"
" "	" "	kidney		(2.2-22.0)	Heppleston & French (1973)
" "	" "	brain		<1.0	"
" "	" "	liver		<1.0	"
" "	West Scotland	"	W	(0.2-1.1)	Roberts et al. (1976)
" "	" "	kidney	W	(0.1-1.9)	"
" "	" "	spleen	W	0.13±SD 0.06	"
" "	" "	brain	W	0.15±SD 0.16	"
" "	" "	muscle	W	0.13±SD 0.06	"
" "	" "	claw	W	0.52±SD 0.33	"
" "	" "	rib	W	0.41±SD 0.33	"
" "	East Anglia	liver	W	(0.2-0.8)	"
" "	" "	kidney	W	(0.1-0.6)	"
" "	Great Britain	liver, mother	W	0.72	"
" "	" "	liver, foetus	W	0.19	"
" "	" "	kidney, mother	W	1.54	"
" "	" "	kidney, foetus	W	0.14	"
Harbor porpoise *Phocoena phocoena*	North Sea	liver	W	(0.05-1.2)	Koeman et al. (1973)
" "	" "	brain	W	(<0.01-0.15)	"

Rat Rattus rattus	United States	kidney	W	0.0	Schroeder & Balassa (1961)
Gray squirrel Sciurus carolinensis	Vermont	kidney	W	3.62	"
" "	Florida	kidney, urban, 1 yr.	W	(3.91-14.93)	McKinnon et al. (1976)
" "	"	" " 2 "	W	15.9	"
" "	"	" " 3 "	W	15.9	"
" "	"	kidney, rural area, 2 yrs.	W	(2.04-4.63)	"
Red squirrel Sciurus hudsonicus	United States	kidney	W	(7.97-17.35)	Schroeder & Balassa (1961)
" "	" "	liver	W	(0.8-2.03)	"
" "	" "	"	W	0.73	Schroeder et al. (1967)
Squirrels Sciurus carolinensis & hudsonicus	Ohio	brain	W	0.086±0.06	Lynch (1973)
" " "	"	kidney	W	1.99±2.4	"
" " "	"	leg muscle	W	0.22±0.18	"
" " "	"	liver	W	0.92±0.89	"
" " "	"	leg bone	W	0.71±0.46	"
Surinam dolphin Sotalia guianensis	Surinam	liver	W	(0.02-0.058)	Koeman et al. (1973)
Columbian ground squirrel Spermophilus columbianus	Montana (control)	immature, liver	W	0.11	Munshower (1972)

Columbian ground squirrel *Spermophilus columbianus*	Montana (control)	mature, liver	W	0.25	Munshower (1972)
" "	" "	immature, kidney	W	0.23	"
" "	" "	mature, kidney	W	1.18	"
" "	Montana (24 km from Zn smelter)	immature, liver	W	0.29	"
" "	" " "	mature, liver	W	0.7	"
" "	" " "	immature, kidney	W	0.99	"
" "	" " "	mature, kidney	W	3.74	"
" "	Montana (near Pb smelter)	liver	W	1.4	Gordon (1972)
" "	" " "	kidney	W	4.0	"
" "	Montana (control)	liver	W	0.02	"
Pig *Sus scrofa*	Montana	liver	W	0.2	Lewis (1972)
" "	"	kidney	W	0.8	"
" "	Montana (24.1 km from Zn smelter)	liver	W	(0.2-0.43)	Munshower (1972)
" "	" " "	kidney	W	(0.71-2.77)	"
" "	United States	kidney	W	(0.15-0.6)	Schroeder & Balassa (1961)
" "	" "	muscle	W	0.025	"
" "	" "	liver	W	(0.1-0.2)	"

Pig _Sus_ _scrofa_	United States	muscle	W	0.25	Schroeder et al. (1967)
" "	Czechoslovakia	liver & kidney	W	(0.16-1.59)	Lener & Bibr (1969)
" "	Romania	muscle	W	0.034	Rautu & Sporn (1970)
" "	Japan	"	W	0.016	Ishazaki et al. (1970)
" "	"	muscle	W	0.032	Yamagata & Shigematsu (1970)
" "	"	liver	W	0.080	
" "	Montana	heart	W	0.1	Lewis (1972)
" "	"	liver	W	0.2	"
" "	"	kidney	W	0.8	Gordon (1972)
Eastern cottontail _Sylvilagus_ _floridanus_	United States	kidney	W	3.58	Schroeder & Balassa (1961)
" "	" "	liver	W	0.3	"
" "	Ohio	leg muscle	W	0.09	Bachant & Schumann (1971)
" "	"	kidney	W	1.3	"
" "	"	brain	W	(ND-0.65) 0.25±0.19	Lynch (1973)
" "	"	kidney	W	(0.018-13.47) 1.61±2.17	"
" "	"	leg muscle	W	(ND-0.52) 0.084±0.11	"
" "	"	liver	W	(0.03-1.19) 0.414±0.39	"

Eastern cottontail *Sylvilagus floridanus*	Ohio	leg bone	W	(0.26-3.59) 1.0±0.67	Lynch (1973)
" "	"	liver	W	(ND-2.13)0.12	Devendorf (1975)
" "	"	muscle	W	(ND-0.181)0.04	"
Mountain cottontail *Sylvilagus nuttallii*	Montana (near Pb smelter)	liver	W	9.1	Gordon (1972)
" "	" " "	kidney	W	53.0	"
Rabbit	Germany	kidney	W	0.6	Kropf & Geldmacher (1968)
"	"	liver	W	0.6	"
Badger *Taxidea taxus*	Montana		W	2.04	Munshower (1972)
Bottle-nosed dolphin *Tursiops truncatus*	fed North Sea fish	liver	W	(0.05-0.3)	Koeman et al. (1973)
Gray fox *Urocyon cinearoargenteus*	Ohio	leg muscle	W	0.065	Lynch (1973)
" "	"	leg bone	W	0.56	"
Red fox *Vulpes vulpes*	Montana	kidney	W	1.35	Munshower (1972)
" "	Ohio	leg muscle	W	(ND-0.08)	Lynch (1973)
" "	"	leg bone	W	(0.44-0.64)	"
" "	Sweden smelter area	kidney	D	(2.6-11.2) 6.0	Westermark et al. (1974)
" "	Sweden	muscle	D	(0.04-0.15) 0.08	"

California sea lion *Zalophus californianus*		liver	W	6.0	in Anas (1974)
" "		kidney	W	60.0	"
" "	Oregon coast 1970	kidney	W	0.7±13.98	Buhler et al. (1975)
" "	" " "	liver	W	2.35±1.17	"
" "	" " "	muscle	W	0.076±0.033	"
" "	" " 1971	kidney	W	(11.5-12.0)means	"
" "	" " "	liver	W	(2.29-3.46) "	"
" "	" " "	muscle	W	(0.069-0.16) "	"
" "	" " 1973	heart	W	0.14±0.05	"
" "	" " "	kidney	W	7.22±2.71	"
" "	" " "	liver	W	1.61±0.16	"
" "	" " "	muscle	W	0.085±0.013	"
" "	California	kidney	D	(18.0-63.0)	in Anderlini (1974)
" "	"	liver, mother	D	(4.3-90.0) 10.0	Martin et al. (1976)
" "	"	kidney, mother	D	(68.0-569.0) 97.0	"
Walrus	Alaska	kidney	W	51.6±35.5	Buhler & Mate (1973)
"	"	liver	W	7.70±1.31	"
"	"	muscle	W	0.445±0.311	"
Whale		muscle	W	(0.25-0.4) 0.33	Ishazaki et al. (1970)

CADMIUM IN BIRDS(1)

Species	Locality	Tissue	Analysis(2) PPM	Authority
Coopers Hawk *Accipiter cooperi*	Arizona	egg	W 0.12±SE 0.023	Snyder et al. (1973)
" "			in 20 of 24 eggs, limits of detection 0.015-0.024	"
Mallard *Anas platyrhynchos*	Alberta	feather	D 0.01	Kelsall (1970)
" "	New York	liver	<2.0	Baker et al. (1976)
" "	" "	muscle	<2.0	"
Black duck *Anas rubripes*	Alberta	feather	D <0.01	Kelsall (1970)
" "	New York	liver	<2.0	Baker et al. (1976)
" "	" "	muscle	<2.0	"
White-fronted goose *Anser albifrons*	Alberta	feather	D 0.01	Kelsall (1970)
Great blue heron *Ardea herodias*	Ohio	breast muscle	W (ND-1.98)	Hoffman & Curnow (1973)

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(2) W, D or A indicates on a Wet, Dry or Ashed basis. A single number indicates a single determination or mean. (x-y) indicates range of values, followed by the mean. ± Standard deviation (SD), standard error (SE), median, and geometric mean are indicated as reported. pCi/g = picocuries per gram.

Great blue heron Ardea herodias	Ohio	liver	W	ND	Hoffman & Curnow (1973)
Lesser scaup Aythya affinis	Alberta	feather	D	<0.01	Kelsall (1970)
Greater scaup Aythya marila nearctica	New York	liver		2.0	Baker et al. (1976)
" " "	" "	muscle		<2.0	"
" " "	" "	brain		<2.0	"
Canvasback Aythya valisineria	" "	liver		4.0	"
" "	" "	muscle		<2.0	"
" "	" "	brain		4.0	"
Ruffed grouse Bonasa umbellus	Vermont	liver	W	0.88	Schroeder et al. (1967)
" "	United States	liver	W	2.04	Schroeder & Balassa (1961)
" "	"	kidney	W	51.35?	"
" "	Ohio	leg muscle	W	<0.001	Lynch (1973)
Canada goose Branta canadensis	New York	liver		<2.0	Baker et al. (1976)
" "	" "	muscle		(<2.0-2.36)	"
" "	" "	brain		2.0	"
Great horned owl Bubo virginianus	Ohio	leg muscle	W	0.045	Lynch (1973)

Bufflehead *Bucephala albeola*	N.W. Atlantic	muscle	D	(0.3-0.4)	Windom (1972)
" "	New York	muscle		<2.0	Baker et al. (1976)
" "	" "	liver		(<2.0-2.0)	"
American egret *Casmerodius albus*	Ohio	breast muscle	W	ND	Hoffman & Curnow (1973)
" "	S. Florida	egg	W	<0.05	Ogden et al. (1974)
Guillemot *Cephus sp.*	Great Britain	liver	D	(0.1-13.0)	Holdgate (1970)
" "	" "	"	D	(0.2-12.0)	"
White ibis *Eudocinus albus*	S. Florida		W	0.05	Ogden et al. (1974)
" "	" "	muscle	W	9.0	"
" "	" "	egg	W	(<0.5-0.5)	"
Common puffin *Fratercula arctica*					Parslow et al. (1972)
" "	Great Britain Angus	liver	D	5.5	"
" "	Great Britain, Aberdeen	"	D	6.8	"
" "	Great Britain, Northumb	"	D	(2.9-7.5)	"
" "	Great Britain, Farnes	"	D	8.4	"
" "	Great Britain St. Kilda	"	D	12.9	"
" "	Great Britain, Clo Mor	"	D	22.3	"
" "	(The St. Kilda and Clo Mor breeding populations were declining. No other levels of pollutants were high.)				"

Chicken Gallus domesticus	United States	liver	W	trace	Schroeder & Balassa (1961)
" "	"	muscle	W	2.0	"
" "	"	egg yolk	W	0.15	"
" "	Montana	muscle	W	0.06	Lewis (1972)
" "	United States	wing	W	0.31	Schroeder et al. (1967)
" "	"	egg	W	0.09	"
" "	"	muscle		0.039±0.088	USHEW (1975)
" "	Germany	"		0.61	Anke et al. (1970)
" "	"	femur		5.07	"
" "	"	feather		0.07	"
" "	"	kidney		13.57	"
" "	"	liver		3.20	"
" "	"	egg		0.46	"
" "	Germany, fed 200 ppm Cd daily	muscle		1.23	"
" "	" " "	femur		6.42	"
" "	" " "	feather		0.34	"
" "	" " "	kidney		632.0	"
" "	" " "	liver		245.0	"
" "	" " "	egg		0.37	"
" "	Czechoslovakia	egg yolk	W	0.120±SE 0.005	Lener & Bibr (1971)

Chicken *Gallus domesticus*	Czechoslovakia	egg white	W	0.076±SE 0.004	Lener & Bibr (1971)
" "	Romania	egg	W	0.021	Rautu & Sporn (1970)
" "	Japan	muscle	W	0.52	Yamagata & Shigematsu (1970)
" "	"	liver	W	0.53	"
" "	"	viscera	W	0.20	"
" "	"	muscle	W	0.027	Ishizaki et al. (1970)
" "	"	egg	W	0.015	"
Bald eagle *Haliaeetus leucocephalus*	United States			ND	Krantz et al. (1970)
Herring gull *Larus argentatus*	Great Britain	egg	W	(0.03-0.06)	Peden et al. (1973)
Lesser black-backed gull *Larus fuscus fuscus*	" "	"	W	0.06	"
" " "	Norway	muscle	D	1.0	Lande (1977)
" " "	"	liver	D	4.0	"
" " "	"	kidney	D	10.0	"
Hooded merganser *Lophodytes cucullatus*	N.W. Atlantic	muscle	D	(<0.1-0.3)	Windom (1972)
White-winged scoter *Melanitta deglandi*	New York	liver		(<2.0-2.0)	Baker et al. (1976)
" "	" "	muscle		<2.0	"
Red-breasted merganser *Mergus serrator*	N.W. Atlantic	"	D	(0.1-0.2)	Windom (1972)

Black-crowned night heron *Nycticorax nycticorax*	Ohio	brain	W	ND	Hoffman & Curnow (1973)
" "	"	feather	W	ND	"
Wilson's petrel *Oceanites oceanicus*	Hallet, Antarctica	liver	D	20.3±5.8	Anderlini et al. (1972)
" "	"	breast muscle	D	3.67±2.14	"
" "	"	bone	D	0.86±0.35	"
" "	Palmer, Antarctica	liver	D	20.7±4.9	"
" "	"	breast muscle	D	3.25±0.97	"
" "	"	bone	D	1.42±0.42	"
Ashy petrel *Oceanodroma homochroa*	California coast	liver	D	53.2±20.5	"
" "	"	breast muscle	D	8.0±4.52	"
" "	"	bone	D	1.88±0.85	"
Snow petrel *Oceanodroma sp.*	Antarctic	liver	D	27.7±12.2	"
" "	"	breast muscle	D	5.57±1.88	"
" "	"	bone	D	0.88±0.17	"
Ruddy duck *Oxyura jamaicensis*	New Jersey	liver	W	(0.27-1.6) 0.61±SE 0.15	White & Kaiser (1976)
" "	" "	liver, adult	W	(0.51-1.60)	"
" "	" "	liver, immature	W	(0.27-0.41)	"

Osprey *Pandion haliaetus*	S. Florida	egg	W	<0.05	Ogden et al. (1974)
Brown pelican *Pelecanus occidentalis*	Florida coast	liver	W	(1.32-2.39)1.8	Connors et al. (1972)
" "	"	breast muscle	W	(0.25-0.32)0.275	"
" "	"	bone	W	(1.38-1.66)1.66	"
" "	California coast	liver	W	(0.62-13.62)4.95	"
" "	"	breast muscle	W	(0.24-0.64)0.392	"
" "	"	bone	W	(1.08-1.96)1.52	"
" "	S. Florida	egg	W	<0.05	Ogden et al. (1974)
" "	S. Carolina	"	W	(0.002-0.008) 0.004 geom. mean	Blus et al. (1977)
" "	Florida	"	W	(0.003-0.011) 0.004	"
" "	S. Carolina	liver	W	(0.01-0.02)	"
" "	Florida	"	W	(0.21-1.06)	"
" "	Georgia	"	W	0.03	"
Cormorant *Phalacrocorax auritus*	S. Florida	egg	W	0.05	Ogden et al. (1974)
Pheasant *Phasianus colchicus*	United States	liver	W	0.9	Schroeder & Balassa (1961)
" "	Ohio	breast muscle	W	<0.087 mean	Bachant & Schumann (1971)
" "	"	liver	W	0.773 "	"

Pheasant *Phasianus colchicus*	Ohio	brain	W	0.001 mean	Lynch (1973)
" "	"	breast muscle	W	0.168 "	"
" "	"	feather	W	1.31 "	"
" "	"	femur	W	1.01 "	"
" "	"	kidney	W	7.45 "	"
" "	"	leg muscle	W	0.078 "	"
" "	"	liver	W	0.19 "	"
" "	"	ovary	W	<0.001 "	"
" "	Illinois	blood	W	(0.07-0.09)	Anderson & Stewart (1969)
" "	"	kidney	W	(0.89-1.46)	"
Eider *Somateria mollisima*	Norway				Lande (1977)
" "	"	muscle	D	2.0	"
" "	"	liver	D	13.0	"
" "	"	kidney	D	25.0	"
" "	"	egg	D	1.0	"
Chipping sparrow *Spizella passerina*	fed ^{109}Cd 21 days	gut	W	75.0 n Ci/g	Anderson & Van Hook (1973)
" "	" " "	kidney	W	29.0 n Ci/g	"
" "	" " "	liver	W	14.0 n Ci/g	"
" "	" " "	feather	W	8.0 n Ci/g	"
" "	" " "	whole body	W	0.007	"

Common tern *Sterna hirundo*	New York Long Island	bone	W	1.61	Conners et al. (1975)
" "	" "	breast muscle	W	0.38	"
" "	" "	liver	W	3.82	"
" "	" "	kidney	W	21.3	"
" "	Canada Lake Ontario	bone	W	1.47	"
" "	" "	breast muscle	W	0.69	"
" "	" "	liver	W	3.69	"
" "	" "	kidney	W	29.5	"
Starling *Sturnus vulgaris*	City areas with over 0.1 ppm in 1971:				Martin & Nickerson (1973)
" "	Phoenix, Arizona	body less skin, beak, feet & wings	W	0.11	"
" "	Stuttgart, Arkansas	" " "	W	0.1	"
" "	Bakersfield, California	" " "	W	0.24	"
" "	Lansing, Michigan	" " "	W	0.12	"
" "	Farmington, N. M.	" " "	W	0.12	"
" "	Elkins, West Va.	" " "	W	0.12	"
" "	1971 and 1973		W	(<0.05-0.2)	"
" "	(Collected at 56 sites in 44 states. 46 areas of U. S. below 0.1, 72% contained 0.05 or less.)				"

Starling *Sturnus vulgaris*	There was slight increase in Cd levels in 1973 over 1971 in the National Monitoring Program on starlings.				White et al. (1977)
" "	United States 1971		W	(0.05-0.24) 0.048±SE 0.006 geom. mean 0.038	"
" "	United States 1973		W	(<0.05-0.20) 0.056±SE 0.005 geom. mean 0.048	"
" "	United States urban, 1973		W	(<0.05-0.11) 0.042±SE 0.007	"
" "	United States rural, 1973		W	(<0.05-0.20) 0.053±SE 0.008	"
" "	United States	kidney	W	1.0	Schroeder & Balassa (1961)
" "	" "	liver	W	0.57	"
Robin *Turdus migratorius*	" "	kidney	W	2.03	"
" "	" "	liver	W	0.55	"
Mourning dove *Zenaida macroura*	Ohio	breast muscle	W	0.41	Lynch (1973)

CADMIUM IN REPTILES(1)

Species	Locality	Tissue	Analysis(2) PPM	Authority
Softshell turtle _Trionyx_ _spinifer_	Tennessee (downstream from plating industry)	kidney	to 9.87	Robinson & Wells (1975)
Turtle	Hudson River, N. Y.	egg	W (0.005-0.05)	Schroeder (1974)
Crocodile _Crocodylus_ _acutus_	Florida	egg	W 0.05	Ogden et al. (1974)

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CADMIUM IN MARINE FISH(1)

Species	Locality	Tissue	Analysis(2) PPM	Authority
Black bream *Acanthopagrus butcheri*	Tasmania		W 0.05	Eustace (1974)
Smooth sandeel *Ammodytes tobianus*	Great Britain	muscle	D 0.4	Stevens & Brown (1974)
Flounder *Ammotretis sp.*	Tasmania	muscle	W <0.05	Eustace (1974)
Catfish *Anarchichas lupus*	Norway		D 0.02	Lande (1977)
Wolf fish *Anarchichas minor*	W. Greenland	muscle	W <0.2	Bollingberg (1975)
" "	" "	liver	W (0.4-12.5)	"
Deepbody anchovy *Anchoa compressa*	Los Angeles Bay		D 0.7	Emerson et al. (1976)
Bay anchovy *Anchoa mitchelli*	N.W. Atlantic	whole body	D 0.6	Windom et al. (1973b)

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(2) W, D or A indicates on a Wet, Dry or Ashed basis. A single number indicates a single determination or mean. (x-y) indicates range of values, followed by the mean. ± Standard deviation (SD), standard error (SE), median, and geometric mean are indicated as reported. pCi/g = picocuries per gram.

Bay anchovy Anchoa mitchelli	Texas	whole body	D	0.5	Sims & Presley (1976)
European eel Anguilla anguilla	Great Britain	muscle	D	0.03	Leatherland & Burton (1974)
" "	" "	"	W	(0.12-0.17)	Wharfe & Van Den Broek (1977)
" "	" "	liver	W	(0.24-0.37)	"
American eel Anguilla rostrata	N.W. Atlantic	muscle	D	<0.1	Windom et al. (1973b)
Blue hake Antimora rostrata	Middle Atlantic Bight	muscle	W	(<0.09-<0.12)	Greig et al. (1976)
" "	" " "	liver	W	(0.32-0.36)	"
Striped cowfish Aracana aurita	Tasmania	muscle	W	0.14	Eustace (1974)
Atlantic argentine Argentina silus	Norway		D	0.02	Lande (1977)
Sea catfish Arius felis (=Galeichthys felis)	S. Florida	whole	W	(0.12-0.15)	Ogden et al. (1974)
Australia salmon Arripis trutta	Tasmania	muscle	W	<0.05	Eustace (1974)
Porcupine fish Atopomycterus nichthemerus	Tasmania		W	0.15	"
Gafftopsail catfish Bagre marinus	N.W. Atlantic	muscle	D	<0.1	Windom et al. (1973b)

Silver perch *Bairdiella chrysura*	N.W. Atlantic	muscle	D	0.4	Windom et al. (1973b)
Garfish *Belone belone*	Great Britain (off shore)	muscle	D	<0.05	Stevens & Brown (1974)
" "	Great Britain (in estuary)	"	D	0.9	"
Lanternfish *Bolinichthys indicus*	Bermuda	mid-section	D	0.9	Gibbs et al. (1974)
Mutugoro *Boleophthalmus pectinirostris*	Japan (1970)	muscle		(0.09-0.12)	Yamazoe & Otubo (1975)
" "	Japan (1974)	"		(0.02-0.07)	"
Menhaden (Machete) *Brevoortia maculata*	Peru	whole		(0.01-0.26) 0.13	Echegaray (1974)
Gulf menhaden *Brevoortia patronus*	Texas	"	D	<0.1	Sims & Presley (1976)
Jolthead porgy *Calamus bajonada*	Puerto Rico	muscle	D	0.38	Lowman et al. (1966)
" "	" "	"	W	0.09	"
" "	" "	gill	D	0.79	"
" "	" "	"	W	0.09	"
" "	" "	intestine	D	2.6	"
" "	" "	"	W	0.59	"
" "	" "	vertebrae	D	1.3	"
" "	" "	"	W	0.76	"
" "	" "	scale	D	2.7	"

Jolthead porgy *Calamus bajonada*	Puerto Rico	scale	W	1.9	Lowman et al. (1966)
Pacific porgy *Calamus brachysomus*	Peru			0.12	Echegaray (1974)
Elephant shark *Callorhynchus millii*	Tasmania	muscle	W	<0.05	Eustace (1974)
Crevalle jack *Caranx hippos*	S. Florida	whole	W	0.05	Ogden et al. (1974)
Silky shark *Carcharhinus falciformis*	N.W. Atlantic	muscle	D	1.0	Windom et al. (1973b)
" "	" "	liver	D	5.0	"
" "	" "	kidney	D	2.6	"
" "	" "	brain	D	<0.2	"
" "	" "	gonad	D	<0.2	"
" "	" "	gill	D	<0.2	"
" "	" "	spleen	D	<0.2	"
Oceanic whitetip shark *Carcharhinus longimanus*	Puerto Rico		W	(0.02-0.56) 0.13	Lowman et al. (1966)
" "	" "		D	(0.03-1.3)0.71	"
Sandbar shark *Carcharhinus milberti*		liver	D	<0.1	Windom et al. (1973b)
Dusky shark *Carcharhinus obscurus*		muscle	D	2.1	"
" "		liver	D	1.6	"
" "		brain	D	<0.1	"
" "		pup	D	(0.2-0.3)	"

Anchovy *Catengraulis edentulus*	Puerto Rico		D	(0.59-2.6)1.3	Lowman et al. (1966)
" "	" "		W	(0.15-0.75) 0.36	"
Black sea bass *Centropristis striatus*	N.W. Atlantic	muscle	D	0.4	Windom et al. (1973b)
Lanternfish *Ceratoscopelus caudispinosus*	Bermuda	midsection	D	(0.3-0.5	Gibbs et al. (1974)
Lanternfish *Ceratoscopelus warmingi*	"	"	D	(0.5-0.8)	"
" "	"	preserved	D	(0.7-1.8)	"
" "	N.W. Atlantic		D	0.7	Windom et al. (1973b)
Thick-lipped gray mullet *Chelon labrosus* (= Crenimugil labrosus)	Great Britain		W	0.08	Peden et al. (1973)
Bumper *Chloroscombrus sp.*	Puerto Rico		D	(0.48-1.0)0.78	Lowman et al. (1966)
" "	" "		W	(0.06-0.42)0.17	"
Rabbit fish *Chimaera monstrosa*	Norway		D	0.01	Lande (1977)
Wrasse *Choerodon sp.*	Norway	muscle	W	<0.002	Havre et al. (1973)
Bearded rockling *Ciliata mustela*	Great Britain	whole	D	8.1±SD 2.27	Hardisty et al. (1974a)
Atlantic herring *Clupea harengus*	Norway		D	(<0.2-0.2)	Andersen et al. (1973)
" "	"		D	0.01	Lande (1977)

Atlantic herring *Clupea harengus*	Scotland	muscle	W	(<0.03-0.12)	Topping (1973a)
" "	Norway	"	W	(0.004-0.033)	Havre et al. (1973)
" "	"	"	D	(0.012-0.081)	"
Conger eel *Conger myriaster*	Japan	"	D	(0.028-0.034)	Ishio et al. (1973)
Eel *Conger sp.*	N.W. Atlantic	"	D	0.3	Windom et al. (1973b)
Wrasse *Ctenolabrus rupestris*	Sweden		D	3.0	Noddack & Noddack (1940)
Lumpsucker, lumpfish *Cyclopterus lumpus*	Norway	muscle	W	0.001	Havre et al. (1973)
" "	Great Britain	skin	W	1.7	Wright (1976)
" "	" "	stomach	W	0.6	"
" "	" "	liver	W	1.08	"
" "	" "	fat body	W	0.82	"
" "	" "	kidney	W	1.83	"
" "	" "	muscle	W	0.12	"
Shiner perch *Cymatogaster aggregata*	Los Angeles Bay		D	0.8	Emerson et al. (1976)
White sea trout *Cynoscion arenarius*	Texas		D	1.8	Sims & Presley (1976)
Spotted sea trout *Cynoscion nebulosus*	"		D	0.1	"
" "	N.W. Atlantic	muscle	D	0.5	Windom et al. (1973b)

Sea carp *Dactylopagrus carponemus*	Tasmania		W	<0.05	Eustace (1974)
Stingray *Dasyatis brevicaudatus*	"		W	<0.05	"
Round scad *Decapterus punctatus*	N.W. Atlantic	muscle	D	<0.1	Windom et al.(1973b)
Lanternfish *Diaphus dumerilii*	N.W. Africa	whole	D	0.73	Leatherland et al. (1973)
Lanternfish *Diaphus mollis*	Bermuda	midsection	D	0.8	Gibbs et al. (1974)
" "	N.W. Atlantic	"	D	0.8	Windom et al.(1973b)
Longfinned pike *Dinolestes lewini*	Tasmania	muscle	W	<0.05	Eustace (1974)
Porgy *Diplodus vulgaris*	Israel	"	D	0.3	Roth & Hornung (1977)
Adriatic anchovy *Engraulis encrasicholus*	Adriatic Sea	skin	W	(0.2-0.6)0.4	Gilmartin & Revelante (1975)
" "	" "	gill	W	(0.1-0.3)0.2	"
" "	" "	muscle	W	(ND-<0.1)<0.1	"
" "	" "	gut	W	(0.2-0.4)0.2	"
" "	" "	liver	W	(ND-1.4)0.7	"
" "	" "	whole	W	(0.09-0.20)0.1	"
Northern anchovy *Engraulis mordax*	California		D	0.9	Emerson et al. (1976)

Petrale sole *Eopsetta jordani*	Oregon	muscle	W	(0.008-0.012)	Childs & Gaffke (1974)
Grouper *Epinephelus aeneus*	Israel	muscle	D	(0.1-0.2)	Roth & Hornung (1977)
Merou blanc *Epinephelus guaza*	"	"	D	0.1	"
Red hind *Epinephelus guttatus*	Grand Bahama Isl.	"		(0.02-0.04) 0.024±0.008	Taylor & Bright (1973)
Nassau grouper *Epinephelus striatus*	" " "	"		(0.01-0.09) 0.02±0.02	"
" "	" " "	liver		(0.87-2.19)	"
"Marine" pike *Esox lucius*	Gulf of Bothnia	muscle	W	(0.004-0.13)	Jaakkola et al. (1972)
" "	" " "	liver	W	(0.034-0.113)	"
" "	" " "	kidney	W	(0.169-0.339)	"
Priest shark *Etomopterus spinax*	Norway		D	0.02	Lande (1977)
Little tunny *Euthynnus alletteratus*	N.W. Atlantic	muscle	D	0.2	Windom et al. (1973b)
Skipjack tuna *Euthynnus pelamis*	Peru	"	D	1.0	Lowman et al. (1967)
" "	"	head	D	2.0	"
" "	"	"	W	1.0	"

Killifish, mummichog Fundulus heteroclitus	Rhode Island (in 0.01 ppm Cd 21 days)		A	7.6	Eisler et al. (1972)
" "	" " " "		W	0.48	"
" "	Rhode Island (control)		A	5.6	"
" "	" " "		W	0.33	"
Rock cod Gadus callarius	Great Britain commercial catch		D	0.0	Leatherland & Burton (1974)
Atlantic cod Gadus morhua	Norway	muscle	W	(0.003-0.012)	Havre et al. (1973)
" "	"	"	D	(0.013-0.059)	"
" "	Great Britain		W	(0.12-0.26)	Peden et al. (1973)
" "	" "	muscle & liver	W	0.12	Portmann (1972)
" "	North Sea	"	W	0.18	"
" "		"	W	<0.05	"
" "	Scotland	muscle	W	<0.03	Topping (1973a)
" "	Atlantic Ocean	"	W	(0.0-0.158) 0.048±0.051	Zook et al. (1976)
" "	Norway		D	(0.01-0.02)	Lande (1977)
" "	Great Britain	skeleton	W	(0.25-1.32)	Wright (1976)
" "	" "	skin	W	(0.4-3.5)	"
" "	" "	stomach	W	(0.12-0.65)	"
" "	" "	liver	W	(0.06-1.72)	"

Atlantic cod *Gadus morhua*	Great Britain	fat body	W	0.17±0.18	Wright (1976)
" "	" "	kidney	W	0.99±1.36	"
" "	" "	muscle	W	(0.11-1.35)	"
" "	" "	gonad	W	0.09±0.06	"
" "	" "	gill	W	1.25	"
" "	Norway	muscle	D	(ND-0.35)	Stenner & Nickless (1974)
" "	"	gill	D	(1.2-2.4)	"
" "	"	liver	D	(ND-1.0)	"
" "	Iceland	muscle	W	(0.0-0.119) 0.043±SD 0.119	Zook et al.(1976)
" "	Atlantic	"	W	(0.0-0.155) 0.048±0.051	"
Black-mouthed dogfish *Galeus melastomus*	Norway		D	0.03	Lande (1977)
School shark *Galiorhinus australis*	Tasmania	muscle	W	<0.05	Eustace (1974)
White croaker *Genyonemus lineatus*	Los Angeles Bay		D	1.2	Emerson et al. (1976)
Witch *Glyptocephalus cynoglossus*	Norway		D	0.01	Lande (1977)
Rex sole *Glyptocephalus zachirus*	Oregon		W	(0.069-0.097)	Robertson et al. (1972)
" "	"		D	(0.36-0.53)	"
" "	"	muscle	W	(0.012-0.026)	Childs & Gaffke (1974)

Sand goby *Gobius minutus*	Great Britain	whole	D	3.2±SD 0.53	Hardisty et al. (1974a)
Soldier fish *Gymnopastes marmoratus*	Tasmania	muscle	W	<0.05	Eustace (1974)
Wrasse (Doncella) *Halichoeres dispilus*	Peru			0.04	Echegaray (1974)
Halosauran *Halosauropsis macrochir*	Middle Atlantic Bight	muscle	W	<0.12	Greig et al. (1976)
Scaled sardine *Harengula sp.*	Puerto Rico		D	(0.78-1.7)1.08	Lowman et al. (1965)
" "	" "		W	(0.23-0.44)0.31	"
Red rock gurnard *Heliocelenus papillosis*	Tasmania	muscle	W	0.06	Eustace (1974)
Sea horse *Hippocampus sp.*	"	"	W	<0.05	"
Pacific halibut *Hippoglossus stenolepis*	Alaska	"	W	(0.0-0.97) 0.056±SD 0.31	Zook et al. (1976)
Longspine squirrel fish *Holocentrus rufus*	Puerto Rico		D	(0.98-4.1)2.2	Lowman et al. (1966)
" "	" "		W	(0.36-1.6)0.84	"
Lanternfish *Hygophum hygomi*	Bermuda	midsection	D	(<0.1-<0.2)	Gibbs et al. (1974)
" "	"	preserved 1958-72	D	(0.1-1.3)	"
" "	"	preserved 1914	D	6.8	"
" "	"	preserved 1885	D	1.3	"

Lanternfish *Hygophum hygomi*	Middle Atlantic Bight	whole	W	(<0.07-0.11)	Greig et al. (1976)
" "	N.W. Atlantic	midsection	D	<0.1	Windom et al. (1973b)
Lanternfish *Hygophum macrochir*	N.W. Africa	whole	D	0.98	Leatherland et al. (1973)
Pinfish *Lagodon rhomboides*	S. Florida	"	W	(0.05-0.12)	Ogden et al. (1974)
Porbeagle, mackerel shark *Lamna nasus*	Great Britain	liver	D	<0.05	Stevens & Brown (1974)
" "	" "	epigonal organ	D	0.5	"
Lanternfish *Lampanyctus photonotus*	Bermuda	midsection	D	0.4	Gibbs et al. (1974)
Lanternfish *Lampanyctus pusillus*	"	"	D	1.6	"
" "	N.W. Atlantic	"	D	(0.4-1.6)	Windom et al. (1973b)
Trumpeter *Latridopsis forsteri*	Tasmania	muscle	W	<0.05	Eustace (1974)
Greater ponyfish *Leiognathus equulus*	Thailand		W	0.007	Huschenbeth & Harms (1975)
Splendid ponyfish *Leiognathus splendens*	"		W	0.02	"
Ponyfish *Leiognathus sp.*	"		W	0.04	"
Leionura atun	Tasmania	muscle	W	<0.05	Eustace (1974)

Spot *Leistomus xanthurus*	Texas	muscle	D	0.2	Sims & Presley (1976)
" "	N.W. Atlantic	"	D	0.5	Windom et al. (1973b)
Lepidophanes indicus	N.W. Atlantic	midsection	D	0.9	"
Lepidopus caudatus	Spain & Portugal	muscle	D	(ND-0.56)	Stenner & Nickless (1975)
" "	"	gill	D	(2.7-4.3)	"
Conger eel *Leptocephalus wilsoni*	Tasmania	muscle	W	0.3	Eustace (1974)
Yellowtail flounder *Limanda ferruginea*	Atlantic Ocean	muscle	W	(0.0-0.059) 0.028±0.023	Zook et al. (1976)
" "	New York Bight	"	W	(0.05-0.1)	Greig & Wenzloff (1977)
" "	" " "	liver	W	(0.09-0.5)	"
Sand dab *Limanda limanda* (=Pleuronectes limanda)	Norway	muscle	D	0.7	Stenner & Nickless (1974)
" "	"	gill	D	2.5	"
" "	Great Britain	skeleton	W	0.47	Wright (1976)
" "	" "	skin	W	0.26	"
" "	" "	liver	W	1.38	"
" "	" "	kidney	W	0.21	"
" "	" "	muscle	W	0.18	"
Grey mullet *Liza ramada*	" "	whole	D	3.0±SD 1.2	Hardisty et al. (1974a)

Lanternfish Lobianchia dofleini	Bermuda	midsection	D	1.6	Gibbs et al. (1974)
" "	N.W. Atlantic	"	D	1.6	Windom et al. (1973b)
Angler Lophius piscatorius	Norway	muscle	W	0.023	Havre et al. (1973)
" "	"	liver	W	2.5	"
Red snapper Lutjanus campechanus	Gulf of Mexico	muscle	W	(0.0-0.119) 0.057±0.044	Zook et al. (1976)
Gray snapper Lutjanus griseus	S. Florida	whole	W	(0.07-0.11)	Ogden et al. (1974)
New Zealand whiptail Macruronus novaezelandiae	Tasmania	muscle	W	<0.05	Eustace (1974)
Grenadier Macrurus rupestris	Norway		D	0.02	Lande (1977)
Black marlin Makaira indica	N.E. Australia	"	W	(0.05-0.4) 0.9±SE 0.009	Mackay et al. (1975)
" "	" "	liver	W	(0.2-83.0) 9.2±SE 2.10	"
Blue marlin Makaira nigricans	Puerto Rico		D	(0.39-1.9) 1.0	Lowman et al. (1967)
" "	" "		W	(0.14-0.4)0.24	"
" "	St. Thomas		D	(0.42-1.9) 0.97	Lowman et al. (1966)
" "	" "		W	(0.1-0.4)0.23	"
" "	Japan	muscle	W	(0.01-0.15) 0.055±0.048	Nishigaki et al. (1974)

Haddock Melanogrammus aeglefinus (= Gadus aeglefinus)	(frozen)	muscle	W	0.08	Schroeder & Balassa (1961)
" "	N. Atlantic	"	W	0.09	Schroeder (1974)
" "	Scotland	"	W	<0.03	Topping (1973b)
" "	Atlantic Ocean	"	W	(0.0-0.083) 0.046±SD 0.03	Zook et al. (1976)
" "	Norway		D	(0.02-0.03)	Lande (1977)
Whiting Merlangius merlangus (= Gadus merlangus)	Great Britain		W	0.09	Peden et al. (1973)
" "	Norway		D	0.02	Lande (1977)
" "	"	muscle	W	(0.002-0.03)	Havre et al. (1973)
" "	"	"	D	(0.008-0.13)	"
" "	Great Britain	whole	D	6.2±SD 0.19	Hardisty et al. (1974a)
" "	" "	<15 cm muscle	W	(0.1-0.15)0.13	Wharfe & Van Den Broek (1977)
" "	" "	>15 cm muscle	W	(0.13-0.28)0.21	"
" "	" "	liver	W	(0.13-0.18)0.15	"
" "	" "	gut wall	W	(0.08-0.21)0.15	"
" "	" "	whole	D	(1.94-2.50)	Badsha & Sainsbury (1977)

Silver hake Merluccius bilinearis	Atlantic Ocean	muscle	W	(0.0-0.2) 0.047±0.061	Zook et al. (1976)
European hake Merluccius merluccius	Norway	"	W	(0.003-0.032)	Havre et al. (1973)
" "	"	liver	W	0.17	"
" "	Great Britain		W	0.09	Peden et al. (1973)
" "	Israel	muscle	D	(0.2-0.3)	Roth & Hornung (1977)
Merluza Merluccius peruanus	Peru	whole		0.0	Echegaray (1974)
Pacific hake Merluccius productus	Pacific Ocean	muscle	W	(0.0-0.059) 0.02±0.19	Zook et al. (1976)
Atlantic croaker Micropogon undulatus	Texas	"	D	0.10	Horowitz & Presley (1977)
" "	"	skin	D	0.21	"
" "	"	whole	D	<0.1	Sims & Presley (1976)
Dover sole Microstomus pacificus	Oregon		W	0.03	Cutshall & Holton (1972)
" "	"		D	0.14	"
" "	"		W	(0.011-0.014)	Childs & Gaffke (1974)
" "	S. California (polluted)	muscle	D	(<1.8-<3.0)	Alexander et al. (1975)
" "	" "	kidney	D	(<3.2-<4.0)	"

Dover sole *Microstomus pacificus*	S. California (polluted)	gonad	D	(<4.2-<5.2)	Alexander et al. (1975)
" "	" "	skin	D	(<3.0-<4.8)	"
" "	S. California	muscle	D	<3.0	McDermott et al. (1976)
" "	"	gonad	D	<3.0	"
" "	S. California (outfall)	liver	D	3.8	"
" "	S. California (control)	"	D	6.4	"
" "	S. California	liver	W	(0.19-0.58)	DeGoeij et al. (1974)
Ling *Molva molva*	Norway	muscle	W	0.003	Havre et al. (1973)
Planehead filefish *Monacanthus hispidus* (=Stephanolepis hispidus)	Middle Atlantic Bight	whole	W	(<0.13-0.14)	Greig et al. (1976)
Bass *Morone labrax*	Great Britain	muscle	D	0.03	Leatherland & Burton (1974)
Striped bass *Morone saxatilis*	Long Island		W	0.249	Zawacki & Briggs (1976)
" "	" "		D	0.796	"
" "	N.W. Atlantic	muscle	D	<0.01	Windom et al. (1973b)
Rockling *Motella sp.*	Great Britain		W	0.06	Peden et al. (1973)

Striped mullet *Mugil cephalus*	Peru			(0.0-0.09) 0.03	Echegaray (1974)
" "	Tasmania	muscle	W	<0.05	Eustace (1974)
" "	N.W. Atlantic	"	W	<1.0	Windom et al. (1973b)
" "	Japan	"	D	0.0	Ishio et al. (1973)
Silver mullet, white mullet *Mugil curema*	S. Florida	whole	W	(0.05-0.06)	Ogden et al. (1974)
Mullet *Mugil sp.*	Spain & Portugal	muscle	D	ND	Stenner & Nickless (1975)
" "	"	gill	D	2.6	"
" "			W	0.08	Peden et al. (1973)
" "	N.W. Atlantic		W	0.1	Windom (1972)
Goatfish *Mullus barbatus*	Israel	muscle	D	(0.2-0.7)	Roth & Hornung (1977)
Gummy shark *Mustelus antarcticus*	Tasmania	muscle	W	<0.05	Eustace (1974)
Smooth dogfish *Mustelus canis*	New York Bight	muscle	W	<0.1	Greig & Wenzloff (1977)
" "	" " "	liver	W	(<0.1-<0.2)	"
Shark *Mustelus mustelus*	Spain & Portugal	muscle	D	ND	Stenner & Nickless (1975)
" "	" "	gill	D	ND	"

Tollo Mustelus sp.	Peru	whole		(0.0-0.08) 0.05	Echegaray (1974)
Scamp Myctoperca phenax	Grand Bahama Isl.	muscle		(0.01-0.03) 0.018±0.007	Taylor & Bright (1973)
Tiger grouper Myctoperca tigris	" " "	muscle		(0.01-0.15) 0.02±0.006	"
" "	" " "	liver		(0.63-2.55)	"
Yellowfin grouper Myctoperca venenosa	" " "	muscle		(0.01-0.04)	"
Four-horned sculpin Myoxocottus quadrecornis	Finland	"	D	0.388	Jaakkala et al. (1972)
" "	"	"	W	0.007	"
" "	"	kidney	D	2.658	"
" "	"	"	W	0.478	"
Leatherjacket Navodon sp.	Tasmania	muscle	W	<0.05	Eustace (1974)
Perch Nemadactylus macropterus	"	muscle	W	<0.05	"
Nematonurus armatus	Middle Atlantic Bight	"	W	(<0.1-0.14)	Greig et al. (1976)
" "	" " "	liver	W	(1.21-1.33)	"
Redspot threadfin bream Nemipterus peronii	Thailand Inner Gulf	muscle	W	0.15	Huschenbeth & Harms (1975)
Threadfin bream Nemipterus sp.	" " "	"	W	(0.03-0.062)	"
Yellowfin tuna Neothunnus macropterus	California	integument	A	1,500.0	Goldberg (1962)

Croaker *Nibea albiflora*	Japan	muscle	D	0.0	Ishio et al. (1973)
Seven-gilled shark *Notorhynchus cepedianus*	Tasmania	"		<0.05	Eustace (1974)
Lanternfish *Notoscopelus caudispinosus*	Bermuda	midsection	D	(0.3-0.5)	Gibbs et al. (1974)
" "	N.W. Atlantic	"	D	0.4	Windom et al. (1973b)
Pejerrey *Odontesthes regia*	Peru	muscle		(0.0-0.57) 0.13	Echegaray (1974)
Shrimp eel *Ophichthus gomesi*	N.W. Atlantic	"	D	<0.1	Windom et al.(1973b)
Palespotted eel *Ophichthus ocellatus*	" "	"	D	0.3	"
Lingcod *Ophiodon elongatus*	Oregon	muscle	W	(0.009-0.224)	Childs & Gaffke (1974)
Atlantic thread herring *Opisthonema oglinum*	Puerto Rico		D	(0.42-1.4) 0.77	Lowman et al. (1966)
" "	" "		W	(0.11-0.32) 0.2	"
" "	" "		D	(0.39-0.76) 0.62	Lowman et al. (1965)
" "	" "		W	(0.12-0.17) 0.15	"
Silver pomfret *Pampus argenteus*	Thailand		W	0.29	Huschenbeth & Harms (1975)

Kelp bass, calico bass Paralabrax clathratus	California	muscle	D	(2.0-4.0)	Stapleton (1968)
" "	"	gonad	D	(3.0-10.0)	"
" "	"	liver	D	(11.0-24.0)	"
" "	"	integument	D	(2.0-6.0)	"
" "	"	heart	D	(2.0-4.0)	"
" "	"	eyeball	D	(4.0-6.0)	"
Sand bass (Cabrilla) Paralabrax humeralis	Peru	whole		(0.0-0.04)0.02	Echegaray (1974)
Flounder (Lenguado) Paralichthys adspersus	Peru			(0.0-0.06)0.03	"
Southern flounder Paralichthys lethostigma	N.W. Atlantic	muscle	D	1.3	Windom et al.(1973b)
" "	Texas		D	0.3	Sims & Presley (1976)
Corvina (Coco) Paralonchurus peruanus	Peru			0.09	Echegaray (1974)
Black pomfret Parastromateus niger	Thailand		W	(0.03-0.051)	Huschenbeth & Harms (1975)
English sole Parophrys vetulus	N.W. Atlantic		D	(0.081-0.09)	Windom et al.(1973b)
" "	" "		W	(0.016-0.017)	"
" "	Oregon coast		D	0.42	Robertson et al. (1972)
" "	" "		W	0.075	"

White sea perch *Phanerodon furcatus*	Los Angeles Bay		D	0.4	Emerson et al. (1976)
Cod *Physiculus barbatus*	Tasmania	muscle	W	<0.05	Eustace (1974)
Sand flathead *Platycephalus bassensis*	Tasmania	"	W	<0.05	"
Flounder *Pleuronectes flesus* (=Platichthys flesus)	Norway	muscle	W	(0.001-0.004)	Havre et al. (1973)
" "	Great Britain		W	(0.62-1.67)	Peden et al. (1973)
" "	" "	muscle	D	0.03	Leatherland & Burton (1974)
" "	" "	whole	D	(1.1-5.2)	Hardisty et al. (1974a)
" "	" "	"	D	5.6±SD 0.29	"
" "	" "		D	(3.4-7.3)means	(1974b)
" "	" "	muscle	W	(0.06-0.08) 0.065	Wharfe & Van Den Broek (1977)
" "	" "	liver	W	(0.15-0.22) 0.18	"
" "	" "	gut wall	W	(0.13-0.23)0.19	"
" "	" "	ovary	W	0.08	"
Plaice *Pleuronectes platessa* (=Platichthys stellatus)	" "		W	0.07	Portmann (1972)
" "	North Sea		W	0.12	"
" "			W	0.05	"
" "	Scotland	muscle	W	(<0.03-0.03)	"

Plaice *Pleuronectes platessa* (=Platichthys stellatus)	W. Greenland	muscle	W	<0.03	Bollingberg (1975)
" "	Great Britain	"	W	(0.05-0.15)	Wharfe & Van Den Broek (1977)
" "	" "	liver	W	(0.16-0.21)0.18	"
" "	" "	gut wall	W	(0.20-0.25)0.22	"
" "	Oregon	muscle	W	0.008±0.002	Childs & Gaffke (1974)
" "	Great Britain	skeleton	W	0.8	Wright (1976)
" "	" "	skin	W	1.33	"
" "	" "	stomach wall	W	3.96	"
" "	" "	liver	W	2.91	"
" "	" "	muscle	W	1.44	"
Pollock *Pollachius pollachius*	" "		W	0.46	Peden et al. (1973)
Pollock, coalfish *Pollachius virens*	Massachusetts	muscle	W	(0.0-0.11) 0.048±0.036	Zook et al. (1976)
" "	Norway	"	W	(0.001-0.002)	Havre et al. (1973)
" "	"	"	D	(<0.005-0.007)	"
" "	Great Britain	gill	W	3.23	Wright (1976)
" "	" "	skeleton	W	1.37	"
" "	" "	skin	W	3.1	"
" "	" "	stomach wall	W	2.1	"

Pollock, coalfish Pollachius virens	Great Britain	kidney	W	4.2	Wright (1976)
" "	" "	muscle	W	0.64	"
Bluefish Pomatomus saltatrix	Long Island		W	0.166	Zawacki & Briggs (1976)
" "	" "		D	1.14	"
Sand goby Pomatoschistus minutus	Great Britain	whole	W	(0.20-0.28) 0.24	Wharfe & Van Den Broek (1977)
" "	" "		D	3.2±SD 0.5	Hardisty et al. (1974b)
Blue shark Prionace glauca	Great Britain	liver	D	(0.05-8.4)	Stevens & Brown (1974)
" "	" "	muscle	D	<0.05	"
" "	" "	testis	D	<0.05	"
" "	" "	ovary	D	<0.05	"
" "	" "	epigonal organ	D	(<0.05-2.1)	"
Common sawshark Pristiophorus cirratus	Tasmania	muscle	W	<0.05	Eustace (1974)
Wenchman Pristipomoides aquilonaris	Texas	muscle	D	0.08	Horowitz & Presley (1977)
" "	"	skin	D	0.24	"
" "	"	viscera	D	2.58	"

Turbot *Psetta maxima* (=Scophthalmus maximus)	Spain & Portugal	muscle	D	ND	Stenner & Nickless (1975)
" "	"	gill	D	4.3	"
Sand sole *Psettichthys melanostictus*	Oregon		D	(0.095-0.15)	Robertson et al. (1972)
" "	"		W	(0.018-0.03)	"
Parrotfish *Pseudolabrus sp.*	Tasmania	muscle	W	<0.05	Eustace (1974)
Winter flounder *Pseudopleuronectes americanus*	Texas	muscle	D	(0.07-0.19) 0.12	Horowitz & Presley (1977)
" "	"	skin	D	(0.14-0.4)0.3	"
" "	New York Bight	muscle	W	<0.1	Greig & Wenzloff (1977)
" "	" " "	liver	W	(<0.1-0.29)	"
Blue skate *Raja batis*	Great Britain		W	0.47	Peden et al. (1973)
Skate *Raja clavata*	Spain & Portugal	muscle	D	2.45	Stenner & Nickless (1975)
" "	" "	gill	D	2.9	"
Clearnose skate *Raja eglanteria*	N.W. Atlantic	muscle	D	0.6	Windom et al.(1973b)
" "	" "	liver	D	<0.2	"
" "	" "	yolk sac	D	0.5	"

Greenland halibut *Reinhardtius hippoglossoides*	W. Greenland	muscle	W	(<0.02-1.7)	Bollingberg (1975)
Atlantic guitarfish *Rhinobatos lentiginosus*	N.W. Atlantic	"	D	0.4	Windom et al.(1973b)
" "	" "	liver	D	1.4	"
" "	" "	stomach	D	0.4	"
" "	" "	yolk sac	D	0.2	"
Cownose ray *Rhinoptera bonasus*	" "	muscle	D	0.2	"
" "	" "	liver	D	0.6	"
" "	" "	brain	D	<0.1	"
" "	" "	stomach	D	0.4	"
" "	" "	spiral	D	0.5	"
" "	" "	uterus	D	0.6	"
Pacific bonito *Sarda chiliensis*	Peru	whole		0.08	Echegaray (1974)
" " (?)	Japan	(processed)	W	1.14	Yamagata & Shigematsu (1970)
Pilchard *Sardina pilchardus*	Great Britain	muscle	D	<0.05	Stevens & Brown (1974)
" "	Spain & Portugal	muscle	D	(0.3-0.6)	Stenner & Nickless (1975)
" "	" "	gill	D	2.3	"
" "	Adriatic Sea	skin	W	(0.2-0.5)0.4	Gilmartin & Revelante (1975)

Pilchard *Sardina pilchardus*	Adriatic Sea	gill	W	(0.1-0.2)0.2	Gilmartin & Revelante (1975)
" "	" "	muscle	W	(ND-<0.1)<0.1	"
" "	" "	gut	W	(ND-0.3)0.1	"
" "	" "	liver	W	(ND-0.4)0.2	"
" "	" "	whole	W	(0.09-0.11)0.1	"
Gilt sardine *Sardinella aurita*	Israel	muscle	D	(0.5-0.6)	Roth & Hornung (1977)
Longer lizard fish *Saurida elongata*	Thailand	muscle	W	0.04	Huschenbeth & Harms (1975)
Lizardfish *Saurida sp.*	"	"	W	(0.05-0.15)	"
Lizardfish *Saurida undosquamis*	Israel	"	D	(0.2-0.4)	Roth & Hornung (1977)
Corvina *Sciaena gilberti*	Peru	whole		(0.0-0.07)0.02	Echegaray (1974)
Atlantic mackerel *Scomber scombrus*	Great Britain	muscle	D	0.5	Stevens & Brown (1974)
" "	Spain & Portugal	"	D	0.77	Stenner & Nickless (1975)
" "	"	gill	D	7.8	"
" "	Great Britain	muscle	D	ND	Leatherland & Burton (1974)

King mackerel *Scomberomorus cavalla*	Puerto Rico		D	(0.19-1.4) 0.49	Lowman et al. (1967)
" "	" "		W	(0.05-0.96) 0.26	"
" "	" "	muscle	D	(0.19-1.4) 0.6	Lowman et al. (1966)
" "	" "	"	W	(0.05-0.96) 0.3	"
Spanish mackerel *Scomberomorus maculatus*	N.W. Atlantic	muscle	D	0.3	Windom et al.(1973b)
Atlantic saury *Scomberesox saurus*	S.W. Africa	"	D	0.05	Leatherland et al. (1973)
" "	" "	heart	D	0.1	"
" "	" "	liver	D	0.62	"
Windowpane *Scophthalmus aquosus*	Long Island Sound	muscle	W	<0.1	Greig et al. (1977b)
" "	New York Bight	liver	W	<0.1	"
" "	Long Island Sound		W	0.285	Zawacki & Briggs (1976)
" "	" " "		D	1.14	"
Spotted dogfish *Scyliorhinus canicula*	Spain & Portugal	muscle	D	(ND-3.2)	Stenner & Nickless (1975)
" "	"	gill	D	(ND-0.42)	"
Sea perch *Sebastes marinus*	Maine	muscle	W	(0.0-0.2) 0.069±0.056	Zook et al.(1976)

Amberjack *Seriola sp.*	Middle Atlantic Bight	muscle	W	<0.1	Greig et al. (1976)
" "	" " "	liver	W	0.24	"
Cojinova *Seriolela violacea*	Peru	whole		0.05	Echegaray (1974)
Queenfish *Seriphus politus*	Los Angeles Bay		D	0.9	Emerson et al. (1976)
Black-ear bass *Serranus atrobranchius*	Texas	muscle	D	0.14	Horowitz & Presley (1977)
" "	"	skin	D	0.28	"
Mackerel trevalley *Serrilela ameculita*	Tasmania	muscle	W	0.05	Eustace (1974)
Siganus rivulatus	Israel	"	D	0.2	Roth & Hornung (1977)
Spotted whiting *Sillago punctata*	Tasmania	muscle		<0.05	Eustace (1974)
Sole *Solea solea*	Spain & Portugal	muscle	D	(0.08-2.1)	Stenner & Nickless (1975)
" "	"	gill	D	(3.3-4.3)	"
" "	Israel	muscle	D	0.2	Roth & Hornung (1977)
Barracuda *Sphyraena sphyraena*	Israel	muscle	D	0.3	"
Scalloped hammerhead *Sphyrna lewini*	N.W. Atlantic	"	D	<0.1	Windom et al.(1973b)

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Scalloped hammerhead Sphyrna lewini	N.W. Atlantic	liver	D	<0.1	Windom et al.(1973b)
" "	" "	stomach	D	<0.1	"
" "	" "	intestine	D	0.8	"
Bonnethead Sphyrna tiburo	" "	muscle	D	0.4	"
" "	" "	liver	D	0.9	"
" "	" "	stomach	D	0.9	"
" "	" "	spleen	D	0.6	"
" "	" "	ovary	D	0.7	"
Spondyliosoma cantharus	Spain & Portugal	muscle	D	ND	Stenner & Nickless (1975)
" "	"	gill	D	2.9	"
Sprat Sprattus sprattus (=Gadus sprattus)	Great Britain	whole	W	(0.50-0.60) 0.29	Wharfe & Van Den Broek(1977)
" "	" "	skin	W	0.84±SD 0.11	Wright (1976)
" "	" "	muscle	W	0.24±SD 0.136	"
Spiny dogshark Squalus acanthias	Sweden	muscle	D	0.0	Noddack & Noddack (1940)
" "	N.W. Atlantic	muscle	D	0.4	Windom et al.(1973b)
" "	" "	stomach	D	3.7	"
" "	" "	spleen	D	1.4	"
" "	" "	liver	D	1.0	"
" "	" "	yolk sac	D	0.2	"
" "	Great Britain		W	(0.07-0.59)	Peden et al. (1973)

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California dogfish *Squalus suckleyi*	Oregon		D	(0.06-0.21) 0.13	Cutshall & Holton (1972)
Dogfish *Squalus sp.*	Tasmania	muscle	W	<0.05	Eustace (1974)
Longspined porgy *Stenotomus chrysops*	Texas	"	D	(0.05-0.16)0.1	Horowitz & Presley (1977)
" "	"	skin	D	(0.14-0.34)0.26	"
Anchovy *Stolephorus sp.*	Thailand		W	0.25	Huschenbeth & Harms (1975)
Synaphobranchus kaupi	Middle Atlantic Bight	whole	W	0.12	Greig et al. (1976)
Lizardfish *Synodus similis*	Thailand		W	0.03	Huschenbeth & Harms (1975)
Seawater catfish *Tachysurus sp.*	Thailand		W	0.003	"
Striped marlin *Tetrapturus audax*	Japan	muscle	W	(0.01-0.03) 0.02±0.0	Nishigaki et al. (1974)
Albacore *Thunnus alalunga*	Japan	muscle	W	(0.01-0.02) 0.012±0.0	"
Albacore tuna *Thunnus albacares*	California	liver	A	3,500.0	Goldberg (1962)
" "	Peru	muscle	D	1.0	Lowman et al. (1967)
" "	Japan	"	W	0.01	Nishigaki et al. (1974)

Bigeye tuna *Thunnus obesus*	Japan	muscle	W	(0.01-0.06) 0.027±0.015	Nishigaki et al. (1974)
Russel's dark *Trachinotus russellii*	Thailand	whole	W	0.12	Huschenbeth & Harms (1975)
Rough scad *Trachurus lathami*	Texas	muscle	D	(0.08-0.21) 0.15	Horowitz & Presley (1977)
" "	"	skin	D	(0.41-0.42)0.42	"
" "	"	viscera	D	0.77	"
Scad *Trachurus symmetricus murphyi*	Peru	whole		(0.0-0.1) 0.04	Echegaray (1974)
Horse mackerel *Trachurus trachurus*	Great Britain	muscle	D	<0.05	Stevens & Brown (1974)
Atlantic cutlass fish *Trichiurus lepturus*	Puerto Rico		W	(<0.005-0.11) 0.05	Lowman et al.(1967)
" "	" "		D	(0.13-0.25) 0.19	Lowman et al.(1966)
" "	" "		W	(0.029-0.057) 0.044	"
" "	" "		D	(<0.005-0.3) 0.2	Lowman et al.(1967)
Poor cod *Trisopterus minutus*	Great Britain	whole	D	8.5±SD 1.23	Hardisty et al. (1974a)
Dwarf goatfish *Upeneus moluccensis*	Israel	muscle	D	(0.2-0.4)	Roth & Hornung (1977)

Red hake Urophycis chuss	New York Bight	muscle	W	<0.1	Greig & Wenzloff (1977)
" "	" " "	liver	W	(0.1-<0.3)	"
White hake Urophycis tenuis	" " "	muscle	W	<0.1	"
" "	" " "	liver	W	<0.1	"
Swordfish Xiphias gladius	Peru	whole		(0.0-0.21) 0.07	Echegaray (1974)
" "	Japan	muscle	W	(0.01-0.22) 0.053±0.06	Nishigaki et al. (1974)
Viviparous blenny Zoarces viviparus	Great Britain	skeleton	W	0.84±SD 0.35	Wright (1976)
" "	" "	skin	W	1.91±SD 0.94	"
" "	" "	stomach wall	W	1.07±SD 0.91	"
" "	" "	liver	W	0.42±SD 0.14	"
" "	" "	muscle	W	0.29±SD 0.21	"
" "	" "	gonad	W	1.63	"

CADMIUM IN FRESHWATER FISH(1)

Species	Locality	Tissue	Analysis(2) PPM		Authority
Atlantic sturgeon *Acipenser oxyrhynchus*	New York		W	0.0915±0.021	Lovett et al.(1972)
Sturgeon *Acipenser sp.*	" "		W	0.0262±0.0035	"
" "	St. Lawrence River	without head & viscera	W	0.06	Tong et al.(1972)
Alewife *Alosa pseudoharengus*	Lake Michigan	whole	W	0.062±0.015	Lucas et al. (1970)
" "	Wisconsin	muscle	W	0.0	Kleinert et al. (1974)
Rockbass *Ambloplites rupestris*	New York		W	(0.014-0.065)	Lovett et al. (1972)
" "	Wisconsin	muscle	W	0.0	Kleinert et al. (1974)
" "	New York	whole	W	(ND-<0.05)	Walsh et al. (1977)

(1) Blank spaces indicate information not available or not applicable. ? indicates questionable data.

(2) W, D or A indicates on a Wet, Dry or Ashed basis. A single number indicates a single determination or mean. (x-y) indicates range of values, followed by the mean. ± Standard deviation (SD), standard error (SE), median, and geometric mean are indicated as reported. pCi/g = picocuries per gram.

Bowfin *Amia calva*	New York		W	0.016	Lovett et al. (1972)
" "	Wisconsin	muscle	W	0.0	Kleinert et al. (1974)
" "	South Carolina	whole	W	ND	Walsh et al. (1977)
Freshwater drum, sheephead *Aplodinotus grunniens*	New York		W	(0.014-0.0289)	Lovett et al. (1972)
" "	Wisconsin	muscle	W	0.0	Kleinert et al. (1974)
" "	Alabama		W	0.03	Schroeder (1974)
" "	Tennessee	whole	W	(0.05-0.8)	Berger (1974)
" "	Lake Erie	"	W	<0.05	Walsh et al. (1977)
" "	Louisiana	"	W	(0.05-0.28)	"
" "	Mississippi	"	W	<0.05	"
" "	Tennessee	"	W	0.8	"
" "	Lake Erie	"	W	<0.05	"
" "	Alabama	"	W	<0.05	"
Goldfish *Carassius auratus*	Lake Erie	liver	W	1.4±1.1	Lucas et al. (1970)
" "	Wisconsin	muscle	W	0.0	Kleinert et al. (1974)
" "	Hudson River		W	0.142	Lovett et al. (1972)
" "	Quebec	whole	D	(0.2-0.4)	Delisle et al. (1975)

Goldfish *Carassius auratus*	New York	whole	W	(0.52-1.3)	Walsh et al. (1977)
River carpsucker *Carpiodes carpio*	Texas	"	W	(ND-0.11)	"
" "	Tennessee	"	W	<0.05	"
Quillback *Carpiodes cyprinus*	Illinois	muscle	W	(0.004-0.046) 0.024	Mathis & Cummings (1973)
" "	Wisconsin	"	W	0.0	Kleinert et al. (1974)
Longnose sucker *Catostomus catostomus*	Alaska	whole	W	(<0.05-0.26)	Walsh et al. (1977)
Bridgelip sucker *Catostomus columbianus*	Oregon	"	W	(<0.05-0.06)	"
" "	Washington	"	W	(0.07-0.28)	"
White sucker *Catostomus commersoni*	New York		W	(0.016-0.023)	Lovett et al. (1972)
" "	" "	without head & viscera	W	0.05	Tong et al. (1972)
" "	Maine	whole	W	(ND-<0.05)	Walsh et al. (1977)
" "	Massachusetts	"	W	(<0.05-0.3)	"
" "	New Jersey	"	W	(<0.05-0.10)	"
" "	Colorado	"	W	<0.05	"
" "	New York	"	W	<0.05	"
" "	Pennsylvania	"	W	(ND-0.06)	"
" "	Minnesota	"	W	0.05	"
" "	Virginia	"	W	<0.05	"

White sucker Catostomus commersoni	Tennessee	whole	W	<0.05	Walsh et al. (1977)
" "	Wisconsin	"	W	0.05	"
" "	Nebraska	"	W	0.05	"
Flannelmouth sucker Catostomus latipennis	Utah	"	W	<0.05	"
Largescale sucker Catostomus macrocheilus	Idaho	"	W	(<0.05-0.36)	"
" "	Washington	"	W	(ND-0.13)	"
" "	Oregon	"	W	(<0.05-0.16)	"
" "	Washington	"	W	(0.54-0.6)	"
Sacramento sucker Catostomus occidentalis	California	"	W	(<0.05-0.17)	"
Klamath sucker Catostomus snyderi	"	"	W	(<0.05-0.17)	"
Sucker Catostomus sp.	Montana	muscle	W	0.6	Van Meter (1974)
" "	"	liver	W	0.79	"
" "	Wisconsin	muscle	W	0.0	Kleinert et al. (1974)
Teymann's spotted catfish Clarius batrachus	Thailand	muscle	W	(0.010-0.07)	Huschenbeth & Harms (1975)
Lake herring, cisco Coregonus artedii	Lake Superior	liver	W	1.6	Lucas et al. (1970)
" "	New York		W	0.0123	Lovett et al. (1972)
" "	Wisconsin	muscle	W	0.0	Kleinert et al. (1974)

Lake herring, cisco *Coregonus artedii*	Hudson River		W	0.16	Schroeder (1974)
Lake whitefish *Coregonus clupeaformis*	New York		W	(0.015-0.115)	Lovett et al. (1972)
" "	Lake Superior	liver	W	0.3±0.1	Lucas et al. (1970)
" "	Lake Michigan	"	W	0.09±0.01	"
" "	Montana	muscle	W	0.2	Van Meter (1974)
" "	"	liver	W	0.65	"
" "	Canada	muscle	W	<0.05	Uthe & Bligh (1971)
" "	Lake Ontario	"	W	<0.05	"
" "	Wisconsin	whole	W	(<0.05-0.2)	Walsh et al. (1977)
Bloater *Coregonus hoyi*	Lake Superior	liver	W	0.7±0.4	Lucas et al. (1970)
" "	Lake Michigan	"	W	0.4±0.1	"
" "	" "	whole	W	(<0.05-0.08)	Walsh et al. (1977)
" "	Wisconsin	"	W	(<0.05-0.09)	"
Carp *Cyprinus carpio*	New York		W	<0.01	Lovett et al. (1972)
" "	Hudson River	muscle	W	(0.2-1.2)	Schroeder (1974)
" "	" "	kidney	W	(1.8-39.7)	"
" "	" "	muscle	W	(0.4-0.67)	"
" "	" "	kidney	W	20.44	"
" "	New York Saratoga Lake	without head & viscera	W	0.14	Tong et al. (1972)

Carp Cyprinus	carpio	Mississippi	whole	W	(<0.05-1.3)	Berger (1974)
"	"	Wisconsin	muscle	W	0.0	Kleinert et al. (1974)
"	"	Illinois River	muscle	W	(0.011-0.069) 0.035	Mathis & Cummings (1973)
"	"	Japan		W	(0.01-0.02)	Yamagata & Shigematsu (1970)
"	"	Indiana	whole	W	(0.5-1.4)	Berger (1974)
"	"	Japan		W	0.003	Ishizaki et al. (1970)
"	"	Maryland	whole	W	(ND-0.11)	Walsh et al. (1977)
"	"	S. Carolina	"	W	(ND-<0.05)	"
"	"	Georgia	"	W	<0.05	"
"	"	Alabama	"	W	(ND-<0.05)	"
"	"	Louisiana	"	W	<0.05	"
"	"	Colorado	"	W	(ND-0.05)	"
"	"	Michigan	"	W	<0.05	"
"	"	Pennsylvania	"	W	0.07	"
"	"	West Virginia	"	W	ND	"
"	"	Ohio	"	W	(<0.05-0.08)	"
"	"	Indiana	"	W	(0.05-0.12)	"
"	"	Illinois	"	W	(0.1-0.12)	"
"	"	Montana	"	W	0.3	"
"	"	Oregon	"	W	(0.05-0.11)	"
"	"	New Mexico	"	W	<0.05	"

Carp *Cyprinus carpio*	Arizona	whole	W	0.1	Walsh et al. (1977)
" "	Nevada	"	W	<0.05	"
Gizzard shad *Dorosoma cepedianum*	New York		W	0.072	Lovett et al. (1972)
" "	Illinois	muscle	W	(0.005-0.068) 0.033	Mathis & Cummings (1973)
" "	Texas	whole	W	(ND-0.06)	Walsh et al. (1977)
" "	Kansas	"	W	(0.27-1.3)	"
Lake chub sucker *Erimyzon sucella*	Michigan	"	W	(0.028-0.055) 0.036±0.017	Mathis & Kevern (1975)
Northern pike *Esox lucius*	Sweden	whole	D	(0.66-0.99)	Ljunggren et al. (1971)
" "	"	muscle	W	(0.02-0.1)	"
" "	"	bone	W	(<0.02-0.03)	"
" "	Norway	muscle	W	(<0.001-0.008)	Havre et al. (1973)
" "	"	"	D	(<0.005-0.039)	"
" "	Canada	"	W	<0.05	Uthe & Bligh (1971)
" "	Lake Erie	"	W	<0.05	"
" "	New York		W	(0.014-0.045)	Lovett et al. (1972)
" "	" "	without head & viscera	W	(0.05-0.14)	Tong et al. (1972)

Northern pike *Esox lucius*	Wisconsin	muscle	W	0.0	Kleinert et al. (1974)
" "	Illinois	"	W	(0.013-0.031) 0.022	Mathis & Cummings (1973)
" "	New York	whole	W	(0.31-0.58)	Walsh et al. (1977)
" "	Minnesota	"	W	(ND-<0.05)	"
Muskelunge *Esox masquinongy*	New York		W	(0.014-0.03)	Lovett et al. (1972)
" "	" "	without head & viscera	W	0.05	Tong et al. (1972)
Chain pickerel *Esox niger*	" "		W	(<0.01-0.031)	Lovett et al. (1972)
" "	" "	without head & viscera	W	(0.05-0.13)	Tong et al. (1972)
" "	Maine	whole	W	(ND-<0.05)	Walsh et al. (1977)
" "	Vermont	"	W	<0.05	"
Swamp eel *Fluta alba*	Thailand	muscle	W	0.010	Huschenbeth & Harms (1975)
Mummichog *Fundulus heteroclitus*	Rhode Island	whole	W	0.33	Eisler et al. (1972)
Goldeye *Hiodon alosioides*	North Dakota	"		(<0.12-0.85)	Berger (1974)
" "	Nebraska	"	W	<0.05	Walsh et al. (1977)
" "	Montana	"	W	<0.05	"

Goldeye *Hiodon alosioides*	North Dakota	whole	W	(<0.05-0.85)	Walsh et al. (1977)
Mooneye *Hiodon tergisus*	Wisconsin	"	W	<0.05	"
White catfish *Ictalurus catus*	New York (given dose of Cd)	kidney (4 days)		4.0% of total body	Rowe & Massaro (1974)
" "	" " "	kidney (14 days)		17.6% of total body	"
" "	" " "	kidney (21 days)		34.0% of total body	"
" "	Connecticut	whole	W	(0.17-1.5)	Berger (1974)
" "	"	"	W	(0.14-0.56)	Walsh et al. (1977)
" "	New Jersey	"	W	<0.05	"
" "	California	"	W	<0.05	"
" "	North Carolina	"	W	<0.05	"
" "	Florida	"	W	<0.05	"
" "	Massachusetts	"	W	0.06	"
Blue catfish *Ictalurus furcatus*	Texas	"	W	<0.05	"
" "	Missouri	"	W	<0.05	"
" "	Louisiana	"	W	(<0.05-0.21)	"
Black bullhead *Ictalurus melas*	Minnesota	whole	W	(ND-<0.05)	"
" "	Colorado	"	W	(ND-<0.05)	"
" "	Utah	"	W	ND	"
Yellow bullhead *Ictalurus natalis*	Michigan	muscle	W	(0.026-0.051) 0.039±0.008	Mathis & Kevern (1975)

Yellow bullhead *Ictalurus natalis*	Minnesota	whole	W	<0.05	Walsh et al. (1977)
" "	Arizona	"	W	<0.05	"
Brown bullhead *Ictalurus nebulosus*	New York		W	0.023	Lovett et al. (1972)
" "	Ohio	whole	W	(<0.05-0.76)	Berger (1974)
" "	New Jersey	"	W	<0.05	Walsh et al. (1977)
" "	N. Carolina	"	W	(ND-0.12)	"
" "	West Virginia	"	W	(ND-0.13)	"
" "	Nevada	"	W	<0.05	"
" "	California	"	W	(ND-<0.05)	"
" "	Oregon	"	W	(ND-<0.05)	"
" "	S. Carolina	"	W	<0.05	"
Channel catfish *Ictalurus punctatus*	Arkansas	muscle (cultured)	W	(0.020-0.152) 0.079±0.052	Zook et al. (1976)
" "	Louisiana	muscle	W	(0.0-0.091) 0.046±0.044	"
" "	Texas	whole	W	(<0.05-0.17)	Berger (1974)
" "	Ohio	"	W	(<0.05-0.76)	"
" "	Maryland	whole	W	<0.05	Walsh et al. (1977)
" "	Virginia	"	W	ND	"
" "	N. Carolina	"	W	(ND-<0.03)	"
" "	Florida	"	W	(ND-0.06)	"
" "	Louisiana	"	W	<0.05	"
" "	Texas	"	W	<0.05	"

Channel catfish *Ictalurus punctatus*	Indiana	whole	W	<0.05	Walsh et al. (1977)
" "	California	"	W	(ND-<0.05)	"
" "	Alabama	"	W	0.16	"
Catfish *Ictalurus sp.*	"		W	0.02	Schroeder (1974)
" "	Wisconsin	muscle	W	0.0	Kleinert et al. (1974)
" "	New York		W	(0.013-0.092)	Lovett et al. (1972)
" "	Georgia		W	0.05	Roberts et al. (1975)
Smallmouth buffalo *Ictiobus bubalus*	Texas	whole	W	<0.05	Walsh et al.(1977)
" "	Arkansas	"	W	(<0.05-0.06)	"
" "	Illinois	"	W	<0.05	"
" "	Wisconsin	"	W	<0.05	"
" "	Missouri	"	W	<0.05	"
" "	Mississippi	"	W	(ND-<0.05)	"
Bigmouth buffalo *Ictiobius cyprinellus*	Illinois	muscle	W	(0.001-0.055) 0.032	Mathis & Cummings (1973)
" "	"	whole	W	<0.05	Walsh et al. (1977)
River lamprey *Lampetra fluviatilis*	Great Britain	"	D	0.5±SD 0.3	Hardisty et al. (1974b)
Brook lamprey *Lampetra planeri*	" "	whole, adult	D	0.75±SD 0.3	"

Brook lamprey *Lampetra planeri*	Great Britain	ammoecoete	D	(0.23-1.25)	Hardisty et al. (1974b)
Guppy *Lebistes reticulatus*	(grown in 0.1 ppm Cd water)			10.5	Landner & Jernelov (1969)
" "	(control)			0.3	"
" "	(grown in 1.0 ppm Cd water with Cd sludge)			14.5	"
" "	(grown in 1.0 ppm Cd water with no Cd sludge)			9.0	"
Spotted gar *Lepisosteus oculatus*	Texas	whole	W	0.05	Walsh et al. (1977)
Long nose gar *Lepisosteus osseus*	"	"	W	(ND-<0.05)	"
Short-nose gar *Lepisosteus platostomus*	Illinois	muscle	W	(0.004-0.085) 0.03	Mathis & Cummings (1973)
Florida gar *Lepisosteus platyrhincus*	S. Florida	whole	W	0.05	Ogden et al. (1974)
Red breast sunfish *Lepomis auritus*	Florida	"	W	<0.05	Walsh et al. (1977)
" "	Maryland	"	W	<0.05	"
Green sunfish *Lepomis cyanellus*	Nebraska	"	W	<0.05	"
Punkinseed *Lepomis gibbosus*	Wisconsin	muscle	W	0.0	Kleinert et al. (1974)
" "	Vermont	whole	W	(ND-<0.05)	Walsh et al. (1977)

Punkinseed *Lepomis gibbosus*	Massachusetts	whole	W	ND	Walsh et al. (1977)
" "	New York	"	W	<0.05	"
Bluegill *Lepomis macrochirus*	Alabama	muscle	W	(0.01-0.08)	Schroeder (1974)
" "	Indiana	whole (young)	W	0.46±0.009	Yost et al. (1974)
" "	"	muscle	W	(0.036-0.038) 0.037	"
" "	"	"		(ND-1.7)0.55	Atchison (1975)
" "	Wisconsin	"	W	0.0	Kleinert et al. (1974)
" "	Georgia		W	(0.05-0.5) 0.28	Roberts et al. (1975)
" "	S. Florida	whole	W	(0.05-0.09)	Ogden et al. (1974)
" "	S. Carolina	"	W	(ND-<0.05)	Walsh et al. (1977)
" "	Florida	"	W	ND	"
" "	Tennessee	"	W	<0.05	"
" "	Oklahoma	"	W	(ND-<0.05)	"
" "	N. Carolina	"	W	(<0.05-0.05)	"
" "	Arizona	"	W	<0.05	"
Red-eared sunfish *Lepomis microlophis*	Alabama			0.02	Schroeder (1974)
Roach *Leuciscus rutilus*	Sweden	0.5-1.5 cm	D	(0.16-0.71)	Ljunggren et al. (1971)

Roach *Leuciscus rutilus*	Sweden	1.5-2.5 cm	D	(0.5-2.4)	Ljunggren et al. (1971)
" "	"	bone	W	<0.057	"
" "	"	muscle	W	<0.007	"
Burbot *Lota lota*	New York		W	<0.01	Lovett et al. (1972)
Smallmouth bass *Micropterus dolomieui*	" "		W	(<0.01-0.039)	"
" "	" "	without head & viscera	W	(0.05-0.12)	Tong et al. (1972)
" "	Wisconsin	muscle	W	0.0	Kleinert et al. (1974)
" "	Alabama	"	W	(0.01-0.08)	Schroeder (1974)
" "	Illinois	muscle	W	0.005	Mathis & Cummings (1973)
" "	Ohio	"	W	(0.043-0.047)	Kelso & Frank (1974)
" "	Hudson R. (contaminated)	"	W	12.3	Schroeder (1974)
" "	Maine	whole	W	(ND-<0.05)	Walsh et al. (1977)
" "	Maryland	"	W	(ND- 0.05)	"
" "	Idaho	"	W	(ND-<0.05)	"
" "	Pennsylvania	"	W	<0.05	"
Largemouth bass *Micropterus salmoides*	Georgia		W	0.05	Roberts et al. (1975)
" "	"			(0.05-0.5)	Mitre Corp (1975)

Largemouth bass Micropterus salmoides	Michigan	muscle	W	(0.02-0.048) 0.036±0.036	Mathis & Kevern (1975)
" "	New York	without head & viscera	W	0.05	Tong et al. (1972)
" "	" "		W	(<0.01-0.022)	Lovett et al. (1972)
" "	Wisconsin	muscle	W	0.0	Kleinert et al. (1974)
" "	S. Carolina	whole	W	(<0.05-0.55)	Berger (1974)
" "	S. Florida	whole	W	0.08	Ogden et al. (1974)
" "	Illinois	muscle	W	(0.004-0.06) 0.022	Mathis & Cummings (1973)
" "	Indiana	"		(ND-15.98) 0.72	Atchison (1975)
" "	"	"	W	0.025±0.005	Yost et al. (1974)
" "	Indiana	whole (young)	W	0.068±0.02	"
" "	New York	whole	W	<0.05	Walsh et al. (1977)
" "	N. Carolina	"	W	(ND-0.06)	"
" "	S. Carolina	"	W	(ND -<0.55)	"
" "	Florida	"	W	(ND-<0.05)	"
" "	Alabama	"	W	(<0.05-0.1)	"
" "	New Mexico	"	W	(ND-<0.05)	"
" "	Tennessee	"	W	(<0.05-0.07)	"
" "	Nevada	"	W	(<0.05-0.23)	"
" "	California	"	W	<0.05	"

Spotted sucker *Minytrema melanops*	Georgia		W	(0.1-0.12)0.11	Roberts et al. (1975)
" "	"	whole	W	(<0.05-0.12)	Walsh et al.(1977)
" "	Florida	"	W	<0.05	"
" "	Alabama	"	W	<0.05	"
White perch *Morone americana*	Connecticut	"	W	(<0.05-0.39)	"
" "	New Jersey	"	W	<0.05	"
" "	New York	"	W	<0.05	"
" "	Maine	W	W	<0.05	"
White bass *Morone chrysops* (=Roccus chrysops)	Lake Erie	liver	W	0.2	Lucas et al. (1970)
" "	" "		W	0.028	Lovett et al. (1972)
" "	New York		W	<0.01	"
" "	Wisconsin	muscle	W	0.0	Kleinert et al. (1974)
" "	Illinois	"	W	(0.004-0.038) 0.024	Mathis & Cummings (1973)
" "	Ohio	"	W	(0.007-0.034)	Kelso & Frank (1974)
" "	New Mexico	whole	W	(ND-<0.05)	Walsh et al. (1977)
" "	Utah	"	W	(ND-<0.05)	"
Yellow bass *Morone mississippiensis* (=Roccus mississippiensis)	Wisconsin	muscle	W	0.0	Kleinert et al. (1974)

Striped bass *Morone saxatilis*	New York		W	0.012	Lovett et al. (1972)
" "	" "	without head & viscera	W	0.05	Tong et al. (1972)
" "	Hudson River		W	0.25	Schroeder (1974)
Sucker *Moxostoma sp.*	Wisconsin	muscle	W	0.0	Kleinert et al. (1974)
Red horse sucker, shorthead redhorse *Moxostoma macrolepidnotum*	Illinois	muscle	W	(0.005-0.031) 0.017	Mathis & Cummings (1973)
" "	Maryland	whole	W	(0.06-0.09)	Walsh et al. (1977)
" "	Virginia	"	W	(ND-0.23)	"
" "	N. Carolina	"	W	(ND-0.17)	"
" "	New York	"	W	<0.05	"
" "	Ohio	"	W	<0.05	"
" "	Montana	"	W	0.32	"
" "	Minnesota	"	W	0.06	"
Striped mullet *Mugil cephalus*	Florida	"	W	(<0.05-0.05)	"
" "	Alabama	"	W	(ND-<0.05)	"
Peamouth chub *Mylocheilus caurinus*	Idaho	"	W	<0.05	"
Golden shiner *Notemigonus chrysoleucas*	Indiana	"		(0.68-0.79) 0.76	Atchison (1975)
" "	Hudson River (contaminated)	"	W	(0.2-68.9)	Schroeder (1974)

Golden shiner *Notemigonus chrysoleucas*	Hudson River (contaminated)	kidney	W	(6.4-16.29)	Schroeder (1974)
" "	New Jersey	whole	W	<0.05	Walsh et al. (1977)
Spottail shiner *Notropis hudsonius*	Lake Erie	"	W	0.1±0.03	Lucas et al. (1970)
Coho salmon *Onchorhynchus kisutch*	Lake Ontario		W	0.0135	Lovett et al. (1972)
" "	New York		W	(0.011-0.024)	"
" "	Wisconsin	muscle	W	0.0	Kleinert et al. (1974)
Striped snakehead *Ophiocephalus striatus*	Thailand	"	W	0.017	Huschenbeth & Harms (1975)
American smelt *Osmerus mordax*	Lake Michigan	liver	W	0.07±0.01	Lucas et al. (1970)
" "	Canada Lake Erie	muscle	W	0.06	Uthe & Bligh (1971)
River catfish *Pangasius pangasius*	Thailand	"	W	0.012	Huschenbeth & Harms (1975)
Yellow perch *Perca flavescens*	Canada Lake Erie	muscle	W	<0.05	Uthe & Bligh (1971)
" "	" "	liver	W	0.54±0.06	Lucas et al. (1970)
" "	" "	whole	W	(0.039-0.063)	Kelso & Frank (1974)

Yellow perch *Perca flavescens*	Lake Erie		W	0.016	Lovett et al. (1972)
" "	" "	liver		0.5	Thomann et al. (1974)
" "	New York		W	(0.03-0.051)	"
" "	" "	without head & viscera	W	0.11	Tong et al. (1972)
" "	Hudson River		W	0.25	Schroeder (1974)
" "	Michigan	muscle	W	(0.019-0.073) 0.04±0.009	Mathis & Kevern (1973)
" "	Wisconsin	"	W	0.0	Kleinert et al. (1974)
" "	Maine	whole	W	(ND-0.05)	Walsh et al. (1977)
" "	Vermont	"	W	(<0.05-0.06)	"
" "	Massachusetts	"	W	ND	"
" "	Maryland	"	W	<0.05	"
" "	Idaho	"	W	<0.05	"
" "	California	"	W	(0.07-0.12)	"
" "	Pennsylvania	"	W	<0.05	"
" "	Michigan	"	W	0.01	"
" "	Connecticut	"	W	<0.05	"
Perch *Perca fluviatilis*	Norway	muscle	W	0.009	Havre et al. (1973)
Trout-perch *Percopsis omiscomaycus*	Lake Michigan	whole	W	0.076±0.008	Lucas et al. (1970)
" "	Lake Superior	"	W	0.14±0.06	"

White crappie *Pomoxis annularis*	Texas	whole	W	<0.05	Walsh et al. (1977)
" "	West Virginia	"	W	(ND-0.05)	"
" "	Indiana	"	W	<0.05	"
" "	Illinois	"	W	(<0.05-0.3)	"
" "	Missouri	"	W	(ND-<0.05)	"
" "	Nebraska	"	W	<0.05	"
Black crappie *Pomoxis nigromaculatus*	New York		W	(0.012-0.014)	Lovett et al. (1972)
" "	" "	without head & viscera	W	0.05	Tong et al. (1972)
" "	Wisconsin	muscle	W	0.0	Kleinert et al. (1974)
" "	Texas	whole	W	0.05	Walsh et al. (1977)
" "	California	"	W	(ND-0.13)	"
" "	Washington	"	W	(ND-<0.05)	"
Round whitefish *Prosopium cylindraceum*	Lake Superior	liver	W	0.4±0.1	Lucas et al. (1970)
" "	Alaska	whole	W	(ND-0.07)	"
Northern squawfish *Ptychocheilus oregonensis*	Washington	"	W	(0.16-1.7)	Berger (1974)
" "	Montana	liver	W	0.53	Van Meter (1974)
" "	Idaho	whole	W	(ND-<0.05)	Walsh et al. (1977)
" "	Washington	"	W	(<0.05-1.7)	"
" "	Oregon	"	W	(<0.05-0.42)	"

Flathead catfish *Pylodictis olivaris*	Arkansas	whole	W	(0.05-0.06)	Walsh et al. (1977)
Dace *Reinichthys sp.*	Hudson River (contaminated)		W	9.1	Schroeder (1974)
Rainbow trout, steelhead *Salmo gairdneri*	New York		W	(0.013-0.027)	Lovett et al. (1972)
" "	Wisconsin	muscle	W	0.0	Kleinert et al. (1974)
" "	Colorado	"	W	3.3	Roberts et al. (1975)
" "	"	whole	W	(2.7-3.0)	"
" "	"	bone	W	(2.8-19.9)	"
" "	"	liver	W	(1.1-7.4)	"
" "	Alaska	whole	W	(<0.05-0.07)	Walsh et al. (1977)
" "	Arizona	"	W	<0.05	"
Brown trout *Salmo trutta*	New York		W	(0.01-0.021)	Lovett et al. (1972)
" "	Wisconsin	muscle	W	0.0	Kleinert et al. (1974)
" "	Colorado	"	W	(0.0-4.2)	Roberts et al. (1975)
" "	"	whole	W	(0.0-3.0)	"
" "	"	bone	W	(1.6-26.4)	"
" "	"	liver	W	(0.0-13.5)	"
Brook trout, speckled trout *Salvelinus fontinalis*	New York		W	23.0	Lovett et al. (1972)

Brook trout, speckled trout Salvelinus fontinalis	Wisconsin	muscle	W	0.0	Kleinert et al. (1974)
" "	Colorado	"	W	(0.0-3.1)	Roberts et al. (1975)
" "	"	whole	W	(0.0-6.5)	"
" "	"	bone	W	(0.0-20.3)	"
" "	"	liver	W	(0.0-7.7)	"
Lake trout Salvelinus namaycush	New York		W	(<0.01-0.0807)	Lovett et al. (1972)
" "	" "	without head & viscera	W	(0.05-0.1)	Tong et al. (1972)
" "	Lake Superior	liver	W	≤3.0	Lucas et al. (1970)
" "	New York	muscle (age 1-12 yrs.)	W	(0.0021-0.0063)	Tong et al. (1974)
" "	Lake Michigan	liver	W	0.06±0.02	Lucas et al. (1970)
" "	Wisconsin	muscle	W	0.0	Kleinert et al. (1974)
" "	"	whole	W	<0.05	Walsh et al. (1977)
" "	Alaska	"	W	(<0.07-0.07)	"
Sauger Stizostedion canadense	Wisconsin	"	W	(<0.05-0.05)	"
" "	Ohio	"	W	<0.05	"
" "	Iowa	"	W	(ND- 0.05)	"
" "	Montana	"	W	<0.05	"
Walleye pike Stizostedion vitreum	Lake Erie	liver	W	0.2	Lucas et al. (1970)

Walleye pike *Stizostedion vitreum*	Lake Erie		W	0.016	Lovett et al. (1972)
" "	" "	liver		0.2	Thomann et al. (1974)
" "	New York		W	(0.01-0.064)	Lovett et al. (1972)
" "	" "	without head & viscera	W	(0.05-0.176)	Tong et al. (1972)
" "	Wisconsin	muscle	W	0.0	Kleinert et al. (1974)
" "	Pennsylvania	whole	W	(<0.05-0.06)	Walsh et al. (1977)
" "	Washington	"	W	(<0.05-0.16)	"
" "	Iowa	"	W	0.05	"
" "	Nebraska	"	W	<0.05	"
" "	North Dakota	"	W	<0.05	"
Arctic grayling *Thymallus arcticus*	Alaska	"	W	(ND-<0.05)	"

CADMIUM IN MOLLUSCA(1)

Species	Locality	Tissue	Analysis(2) PPM	Authority
Acaultocardia aculeata	Spain & Portugal		D ND	Stenner & Nickless (1975)
Gastropod *Acmaea digitalis*	California	shell	D (<2.5-6.2)	Graham (1972)
" "	"	body	D (6.7-12.1)	"
Clam *Amblema plicata*	Illinois	soft parts	W (0.15-1.41) 0.38	Mathis & Cummings (1973)
Blood clam *Anadara broughtonii*	Japan	"	D (0.0-1.204)	Ishio et al. (1973)
Arch shell *Anadara granosa*	Thailand	"	W 0.28	Huschenbeth & Harms (1975)
Blood clam *Anadara granosa bisenensis*	Japan	"	D 1.938	Ishio et al. (1973)
Blood clam *Anadara nipponensis*	"	"	D (1.601-2.999)	"

(1) Blank spaces indicate information not available or not applicable. ? indicates questionable data.

(2) W, D or A indicates on a Wet, Dry or Ashed basis. A single number indicates a single determination or mean. (x-y) indicates range of values, followed by the mean. ± Standard deviation (SD), standard error (SE), median, and geometric mean are indicated as reported. pCi/g = picocuries per gram.

Blood clam *Anadara satowi*	Japan	soft parts	D	(1.601-2.999)	Ishio et al. (1973)
Blood clam *Anadara subcrenata*	"	"	D	(1.09-3.353)	"
Anodonta cygnea	Great Britain	"	D	(0.49-9.2)	Leatherland & Burton (1974)
Anodonta sp.	Illinois	shell	D	1.35±0.26	Anderson (1977)
" "	"	soft parts	D	1.78	"
Saddle oyster *Anomia walteri*	New Zealand	"	W	2.0	Nielsen & Nathan (1975)
Calico scallop *Aequipecten gibbus*	Florida		W	(1.57-3.19) 2.34±0.41	Zook et al. (1976)
Atlantic bay scallop *Aequipecten irradians* (=argopecten irradians)	Rhode Island (in 0.01 ppm Cd seawater 21 days)	adductor muscle	A	74.1	Eisler et al. (1972)
" "	" " " "	"	W	1.68	"
" "	" " " "	soft parts	A	85.0	"
" "	" " " "	"	W	2.74	"
" "	(control)	adductor muscle	A	49.2	"
" "	"	"	W	1.41	"
" "	"	soft parts	A	29.5	"
" "	"	"	W	1.05	"
" "	Massachusetts	"	W	(0.0-0.1) 0.035±0.031	Zook et al. (1976)
" "	Connecticut		W	4.8±SE 0.2	Nelson et al. (1976)

Archidorus britannica		mantle	A	300.0	Webb (1937)
" "		other soft parts	A	100.0	"
Ribbed mussel *Arcuatela demissus* (=Modiolus demissus)	New England (control)	soft parts	D	1.98±SE 0.09	Valiela et al. (1974)
" "	New England (light sewage sludge)		D	3.75±SE 0.13	"
" "	New England (heavy sewage sludge)		D	7/13±SE 3.24	"
" "	Norway		D	15.6	Anderson & Neelaktan (1974)
Ridged mussel *Aulocomya ater*	Peru			(0.04-0.73) 0.45	Echegaray (1974)
" " (Cholgas)	"			1.58	"
Ridged mussel *Aulocomya maoriana*	New Zealand	soft parts	W	(0.16-2.40) 0.94	Nielsen & Nathan (1975)
Whelk *Buccinum undatum*	Great Britain	shell	D	0.018	Mullin & Riley (1956)
" "	" "	soft parts	D	31.8	"
" "	" "	mantle	D	0.96	"
" "	" "	foot	D	0.29	"
" "	" "	digestive gland	D	68.0	"
" "	" "	renal organ	D	17.7	

Whelk *Buccinum undatum*	Great Britain	male gonad	D	24.3	Mullin & Riley (1956)
" "	" "	female gonad	D	11.4	"
" "	Scotland Irish Sea	soft parts	D	2.2	Mackay et al. (1972)
" "	Scotland (dump area)	"	D	5.75	"
" "	Great Britain	"	D	2.2	Segar et al. (1971)
Prosabranch *Bullia digitalis*	South Africa	whole body	W	(1.58-39.1) 30.1±SE 3.5	Cuthbert et al. (1976)
" "	" "	"	D	(65.7-164.9) 125.3±SE 14.5	"
" "	" "	viscera	W	(107.0-387.6) 203.9±SE 40.4	"
Channeled whelk *Busycon canaliculatum*	Long Island Sound	muscle	W	(0.17-0.21)	Greig et al. (1977b)
" "	" " "	digestive gland	W	(15.7-23.8)	"
" "	Chincoteague Inlet	"	W	7.4	"
Beaded top shell *Calliostoma zizyphinum*	Great Britain	shell	D	0.049	Mullin & Riley (1956)
" "	" "	soft parts	D	3.05	"
" "	Spain & Portugal		D	9.0	Stenner & Nickless (1975)
Snail *Campeloma sp.*	Illinois	soft parts	D	1.76	Anderson (1977)

Cockle *Cerastoderma edule* (=Cardium edule)	Norway		D	(4.5-19.3)	Stenner & Nickless (1974a)
" "	Great Britain	soft parts	D	(0.81-0.92)	Leatherland & Burton (1974)
" "	" "	mantle fluids	D	2.1	"
" "	" "	soft parts	D	1.5	Segar et al. (1971)
New Zealand cockle *Chione stutchburyi*	New Zealand	"	W	0.19	Nielsen & Nathan (1975)
Scallop *Chlamys operculis*	Great Britain	shell	A	0.008	Mullin & Riley (1956)
" "	" "	"	D	0.008	"
" "	" "	gill	A	6.5	"
" "	" "	"	D	1.24	"
" "	" "	mantle & viscera	A	44.5	"
" "	" "	"	D	9.62	"
" "	" "	muscle	A	13.4	"
" "	" "	"	D	0.87	"
" "	" "	gonad	A	21.2	"
" "	" "	"	D	2.21	"
" "	" "	soft parts	W	0.65	Bryan (1973)
" "	" "	"	D	5.5	"
" "	" "	kidney	W	9.3	"
" "	" "	"	D	41.0	"

Scallop *Chlamys operculis*	Great Britain	digestive gland	W	7.1	Bryan (1973)
" "	" "	"	D	27.0	"
South African black mussel *Choromytilis meridionalis*	South Africa	soft parts	D	(1.0-8.0)3.7	Watling & Watling (1976b)
" "	" "	"	W	(0.33-0.53)	" (1976a)
Clinocardium sp.	Oregon coast		W	0.019±0.01	Caldwell & Buhler (1976)
Corbicula sp.	Japan	soft parts	W	0.07-1.58	Yamagata & Shigematsu (1970)
Portuguese oyster *Crassostrea angulata*	Spain & Portugal	"	D	(2.9-3.5)	Stenner & Nickless (1975)
Sydney rock oyster *Crassostrea commercialis*	Tasmania	"	W	0.0	Ratkowsky et al. (1974)
" "	New South Wales	"	W	(0.1-1.0)0.2	Mackay et al. (1975a)
Pacific oyster *Crassostrea gigas*	Tasmania	"	W	(0.0-30.69)	Ratkowsky et al. (1974)
" "	U.S. Pacific coast	"	W	(0.20-2.10) 1.14	Pringle et al. (1968)
" "	Washington coast	"	W	(0.80-1.40)	"
" "	California (not polluted)	"	W	(0.8-1.0)	Ayling (1973)
" "	California (polluted)	"	W	(14.0-27.0)	"

Pacific oyster Crassostrea gigas	South Africa	soft parts	D	9.0	Watling & Watling (1976b)
" "	" "	"	D	(3.7-9.0)	" (1976a)
" "	Great Britain	"	D	(2.0-27.0)	Thornton et al. (1976)
" "	Great Britain (polluted)	"	D	(6.0-40.0) 32.0	Boyden & Romeril (1974)
" "	Tasmania Derwent estuary	"	W	(10.1-31.7) (means)	Thrower & Eustace (1973)
" "	Tasmania (Tamar estuary)	"	W	(2.3-14.6) (means)	"
" "	Tasmania	"	W	(2.0-5.7) (means)	"
" "	Great Britain (polluted)	"	W	(1.8-3.8)	Darracott & Watling (1975)
" "	" " " "	"	D	(14.1-26.1)	"
" "	Great Britain (not polluted)	"	W	(0.2-0.3)	"
" "	" " " "	"	D	(1.6-2.2)	"
" "	" " " "	whole	W	0.8	"
" "	" " " "	gill	W	(1.3-1.7)	"
" "	" " " "	mantle	W	(0.8-1.6)	"
New Zealand oyster Crassostrea glomerata	New Zealand	soft parts	W	(0.55-0.75	Nielsen (1975)
" "	" "	"	W	(0.12-5.0) 1.3	Nielsen & Nathan (1975)

Oyster Crassostrea	margaritacea	South Africa Krysna	soft parts	D	2.5	Watling & Watling (1976a)
"	"	South Africa Langebaan Lagoon	"	D	7.0	"
Atlantic oyster Crassostrea	virginica	(exposed to 0.1 ppm Cd in sea-water, died in 16 weeks)	"	W	(118.2-122.5)	Schuster & Pringle (1969)
"	"	(exposed to 0.2 ppm Cd in sea-water, died in 15 weeks)	"	W	(96.5-125.8)	"
"	"	(control in flow-through seawater)	"	W	(0.21-3.43)	"
"	"	United States	"	W	(3.0-3.66)	Schroeder & Balassa (1961)
"	"	Connecticut	"	W	(0.0-43.0) 7.91	Roberts et al. (1975)
"	"	"	"	W	(0.0-9.6)	"
"	"	"	"	D	(15.6-28.1)	Greig et al. (1975)
"	"	Rhode Island (in 0.01 ppm Cd seawater 21 days)	"	A	52.1	Eisler et al. (1972)
"	"	" " " "	"	W	1.49	"
"	"	Rhode Island (control)	"	A	9.3	"
"	"	" " "	"	W	0.33	"
"	"	Rhode Island (at emetic threshold of over 0.01 ppm Cd)	"	W	(13.0-15.0)	"

Atlantic oyster *Crassostrea virginica*	New England (control)	soft parts	D	7.18±SE 0.52	Valiela et al. (1974)
" "	New England (light sewage sludge)	"	D	8.60±SE 0.49	"
" "	New England (heavy sewage sludge)	"	D	9.45±SE 0.51	"
" "	Chesapeake Bay	"		(<0.6->2.5)	Bender et al. (1972)
" "	Maine to N. Carolina	"	W	(0.10-7.80) 3.10	Pringle et al. (1968)
" "	N.W. Atlantic	"	D	(1.0-7.7) 2.4	Windom & Smith (1972b)
" "	Mobile Bay	"	W	(<0.05-1.61) 0.62	Kopfler & Mayer (1973)
" "	Florida	"	W	0.2	Nielsen (1975)
" "	U.S. Atlantic coast	"	W	(0.08-7.78) 2.40	Schuster & Pringle (1969)
" "	" " "	"	W	(3.1-7.8)	Schroeder (1974)
" "	Gulf of Mexico	"	W	(0.88-2.6)	"
" "	Chesapeake Bay	"	W	(0.375-1.29) 0.621±0.317	Zook et al. (1976)
" "	Massachusetts	"	W	0.78±0.48	Roberts et al. (1975)
" "	Long Island	"	W	(1.6-2.37) 2.06±0.023	Zook et al. (1976)
" "	Texas	"	W	(0.05-4.1)	Roberts et al. (1975)

Atlantic oyster *Crassostrea virginica*	Texas	shell	D	0.1	Smith & Wright (1962)
" "	"	soft parts	D	(2.4-40.0)	Sims & Presley (1976)
" "	E. United States	"		(<0.6-2.5)	Huggett et al. (1973)
Atlantic slipper shell *Crepidula fornicata*	Great Britain		D	(0.69-1.4)	Leatherland & Burton (1974)
Crepidula sp.	San Diego Bay		W	(1.1-4.7) 2.6	Seba (undated)
Donax vittatus	Spain & Portugal		D	(ND-1.3)	Stenner & Nickless (1975)
Razor clam *Ensis arcuatus*	"		D	0.3	"
Clam *Fusconaia flava*	Illinois	soft parts	W	(0.36-1.17) 0.69	Mathis & Cummings (1973)
Top shell *Gibbula cineraria*	Spain & Portugal		D	5.0	Stenner & Nickless (1975)
Top shell *Gibbula lineata*	"		D	6.2	"
Top shell *Gibbula umbilicalis*	Great Britain	shell	D	0.029	Mullin & Riley (1956)
" "	" "	soft parts	D	0.829	"
" "	Spain & Portugal	"	D	(3.6-7.8)	Stenner & Nickless (1975)

Glycymeris glycymeris	Great Britain	soft parts	D	3.3	Segar et al. (1971)
Goniobasis sp.	Illinois	"	D	2.19±0.37	Anderson (1977)
Abalone *Haliotis corrugata*	California	muscle	W	(0.28-0.31)	Vattuone et al. (1976)
" "	"	digestive gland	W	(50.6-82.2)	"
Abalone, paua *Haliotis iris*	New Zealand	soft parts	W	(0.09-0.24) 0.17	Nielsen & Nathan (1975)
Red abalone *Haliotis rufescens*	California	gill	D	(3.5-20.0) means	Anderlini (1974)
" "	"	mantle	D	(2.8-12.8) means	"
" "	"	digestive gland	D	(183.6-1162.7) means	"
" "	"	digestive gland (max.)	D	1400.0	"
" "	"	foot	D	(0.17-0.31) means	"
Snail *Helix aspersa*	Great Britain (not polluted)	albumin	D	0.24±SE 0.07	Coughtrey & Martin (1976)
" "	" " "	gonad	D	0.26±SE 0.02	"
" "	" " "	collar	D	0.24±SE 0.05	"
" "	" " "	skin	D	0.11±SE 0.06	"
" "	" " "	foot	D	0.5±SE 0.06	"
" "	" " "	kidney	D	0.16±SE 0.06	"
" "	" " "	crop	D	0.86±SE 0.01	"
" "	" " "	digestive gland	D	2.36±SE 0.19	"

Snail *Helix aspersa*	Great Britain (polluted area)	(total)	D	64.71±SE	Coughtrey & Martin (1976)
" "	" " "	albumin	D	0.96±SE 0.41	"
" "	" " "	gonad	D	5.04±SE 0.65	"
" "	" " "	collar	D	5.35±SE 1.25	"
" "	" " "	skin	D	6.99±SE 1.04	"
" "	" " "	foot	D	12.35±SE 1.47	"
" "	" " "	kidney	D	82.63±SE 8.91	"
" "	" " "	crop	D	115.86±SE 28.53	"
" "	" " "	digestive gland	D	198.45±SE 23.92	"
" "	(non-polluted area)	(total)	D	6.04±SE 0.64	"
" "			A	300.0	Webb (1937)
Rock scallop *Hinnites multirugosus*	California Anacapa Isl.	muscle	W	(0.32-0.79) 0.51±SD 0.12	Vattuone et al. (1976)
" "	"	kidney	W	(3.8-16.6) 10.1±SD 3.6	"
" "	"	digestive gland & stomach	W	(123.0-288.0) 211.0±SD 51.9	"
" "	California Santa Barbara Isl.	muscle	W	(0.26-0.68) 0.35±SD 0.12	"
" "	"	soft parts	W	(1.8-46.8) 31.2±SD 15.2	"
" "	"	viscera	W	(2.5-69.4) 46.3±SD 22.6	"
Lampsilis sp.	Illinois	soft parts	D	2.23±0.27	Anderson (1977)

Lasmigona sp.	Illinois	soft parts	D	1.43	Anderson (1977)
Sea snail *Liparis liparis*	Great Britain	"	D	16.8±SD 0.87	Hardisty et al. (1974a)
" "	" "	"	D	(13.7-16.8)	" (1974b)
Periwinkle *Littorina littoralis*	Norway	"	D	(0.0-12.5)	Stenner & Nickless (1974a)
" "	Norway (near metal smelter)	"	D	20.0	"
" "	Great Britain	"	D	3.54	Mullin & Riley (1956)
" "	Great Britain Severn Beach	"	D	178.0	Leatherland & Burton (1974)
Periwinkle *Littorina littorea*	Great Britain	shell	D	0.012	Mullin & Riley (1956)
" "	" "	soft parts	D	1.84	"
" "		"	A	10.0	Webb (1937)
" "	Scotland coast	"	W	(0.03-0.5) 0.2	Topping (1973b)
" "	Great Britain	"	D	(0.94-1.5)	Leatherland & Burton (1974)
" "	" "	"	D	(8.0-75.0)	Nickless et al. (1972)
" "	Great Britain Severn estuary (polluted)	"	D	(100.0-520.0)	Butterworth et al. (1972)

Periwinkle *Littorina littorea*	Great Britain	soft parts	W	(0.25-1.93)	Wharfe & Van Den Broek (1977)
Periwinkle *Littorina littorina*	" "	"	D	(15.0-210.0)	Butterworth et al. (1972)
" "	Irish Sea	"	W	(2.0-15.0)	Nickless et al. (1972)
Periwinkle *Littorina saxatilis*	Norway	"	D	6.0	Stenner & Nickless (1974a)
Squid *Loligo opalescens*	Central California	liver	D	(22.6-265.5) 85.0±51.6	Martin & Flegal (1975)
" "	S. California	"	D	(33.0-233.1) 121.5±57.9	"
Squid *Loliguncula brevis*	N.W. Atlantic		D	(0.5-0.7)0.6	Windom (1972)
Macoma *Macoma nasuta*	Los Angeles harbor		D	(0.9-1.0)	Emerson et al. (1976)
Hard shell clam, quahog *Mercenaria mercenaria*	New England (control)	soft parts	D	1.25±SE 0.12	Valiela et al. (1974)
" "	New England (light sewage sludge)	"	D	2.18±SE 0.13	"
" "	New England (heavy sewage sludge)	"	D	2.08±SE 0.12	"
" "	U.S. coasts	"	W	(0.10-0.73) 0.19	Pringle et al. (1968)
" "	Carolina coast	"	W	(0.1-0.73) 0.19	Ronk (1971)

Hard shell clam, quahog *Mercenaria mercenaria*	N. W. Atlantic	soft parts	D	(0.2-1.2)0.7	Windom (1972)
" "	Massachusetts	"	W	0.26±0.31	Roberts et al. (1975)
" "	Great Britain	"	D	2.1	Segar et al. (1971)
" "	Virginia Chincoteague	"	W	(0.098-0.159) 0.122±0.02	Zook et al. (1976)
Machas *Mesodesma donacium*	Peru			(0.32-0.78) 0.55	Echegaray (1974)
Ribbed mussel *Modiolus modiolus*	Great Britain	"	D	5.8	Segar et al. (1971)
Black mussel *Modiolus neozelanicus*	New Zealand	"	W	0.04	Nielsen & Nathan (1975)
Softshell clam *Mya arenaria*	Chesapeake Bay	"	W	(0.059-0.293) 0.184±0.082	Zook et al. (1976)
" "	Eastern United States	"	W	(0.10-0.90) 0.27	Pringle et al. (1968)
" "	Massachusetts	"	W	0.30±0.33	Roberts et al. (1975)
" "	Oregon coast	"	W	0.029±0.018	Caldwell & Buhler (1976)
Ocean mussel *Mytilus californianus*	California	"	W	(1.43-2.63) 1.88±SD 0.44	Vattuone et al. (1976)
" "	"	"	D	(2.0-4.9)3.1	Graham (1972)
" "	"	shell	D	(<2.5-9.2)4.7	"

Common mussel *Mytilus edulis*	Great Britain	shell	D	0.003	Mullin & Riley (1956)
" "	" "	soft parts	D	3.21	"
" "	Norway	"	D	(1.9-29.0)	Stenner & Nickless (1974a)
" "	Norway (near metal smelter)	"	D	140.0	"
" "	Irish Sea	"	W	(0.8-12.0)	Nickless et al. (1972)
" "	" "	"	D	(0.4-60.0)	"
" "	Great Britain	"	D	2.5	Leatherland & Burton (1974)
" "	Scotland	"	W	(0.1-0.93) 0.33	Topping (1973b)
" "	"	"		2.0	"
" "	Irish Sea	"	D	5.1	Segar et al. (1971)
" "	" "	"	W	0.57	"
" "	California	"	D	(3.1-6.8)5.0	Graham (1972)
" "	"	shell	D	(<2.5-5.8)4.6	"
" "	W. Greenland		W	(<0.4-0.9)	Bollingberg (1975)
" "	Great Britain	soft parts	W	(0.55-1.50)	Wharfe & Van Den Broek (1977)
Mussel *Mytilis edulis aotaenus*	New Zealand Tasman Bay	"	D	(<10.0-<20.0)	Brooks & Rumsby (1965)

Mussel *Mytilis edulis aotaenus*	Australia	soft parts	D	(0.51-2.95)	Shapiro (1975)
" " "	Tasmania	"	W	5.5	Eustace (1974)
" " "	Australia (polluted bay)	"	D	(2.8-83.0)	Talbot et al. (1976)
" " "	New Zealand	"	W	(0.26-1.6) 0.63	Nielsen & Nathan (1975)
Mussel *Mytilis galloprovincialis*	Mediterranean	"	D	3.94	Fowler & Benayoum (1974)
" "	"	"	W	1.3	"
" "		shell	D	5.41	"
" "		"	W	1.78	"
" "		mantle	D	1.26	"
" "		"	W	0.42	"
" "		gill	D	1.21	"
" "		"	W	0.4	"
" "		viscera	D	1.44	"
" "		"	W	0.48	"
" "		muscle	D	2.08	"
" "		"	W	0.95	"
" "	N.W. Mediterranean	soft parts	D	(0.4-5.9)1.9	Fowler & Oregioni (1976)
Mussel *Mytilis viridis*	Thailand	"	W	0.38	Huschenbeth & Harms (1975)
Mud snail *Nassarius fossatus*	Los Angeles harbor		D	2.3	Emerson et al. (1976)

Squid Notodarius gouldi	Tasmania		W	<0.05	Eustace (1974)
Dog whelk Nucella lapillus (=Thais lapillus)	Great Britain	shell	D	0.082	Mullin & Riley (1956)
" "	" "		D	37.9	"
" "	" "	soft parts	W	(31.0-72.5)	Nickless et al. (1972)
" "	Great Britain Severn estuary (polluted)	"	D	(62.0-425.0)	Butterworth et al. (1972)
" "	Great Britain	"	D	73.0	Segar et al. (1971)
" "	Great Britain (polluted area)	"	W	(16.3-39.0)	Peden et al. (1973)
" "	Great Britain (control)	"	W	2.2	"
" "	Norway		D	(13.0-39.0)	Stenner & Nickless (1974a)
" "	Great Britain	"	D	21.0	Leatherland & Burton (1974)
" "	Great Britain (clean water)	"	D	(11.0-62.0) 36.0±SD 14.0	Stenner & Nickless (1974b)
" "	(transplanted to polluted Bristol Channel) 1 mo.	"	D	(44.0-93.0) 63.0±SD 18.0	"
" "	" " " 5 mo.	"	D	(167.0-243.0) 211.0±SD 27.0	"
" "	Great Britain Bristol Channel (polluted)	"	D	(500.0-1,120.0) 780.0±SD 200.0	"

Dog whelk *Nucella lapillus*	Great Britain Bristol Channel (polluted)	soft parts	D	(31.0-725.0)	Nickless et al. (1972)
Octopus *Octopus vulgaris*	N.W. Atlantic		D	0.5	Windom (1972)
" "	" "		W	0.12	"
" "	Spain & Portugal	leg	D	8.0	Stenner & Nickless (1975)
Octopus *Octopus sp.*	Tasmania		W	<0.05	Eustace (1974)
Herbivorous gastropod *Olivella biplacata*	California	soft parts	D	(2.3-4.2)	Schwimer (1973)
" "	"	shell	D	0.2±0.4	"
Squid *Ommastrephes illecebrosa*	N. W. Atlantic		A	500.0	Nicholls et al. (1959)
Squid *Ommastrephes bartrami*	Pacific Ocean	liver	D	(71.0-694.0) 287.0±202.0	Martin & Flegal (1975)
Pacific oyster *Ostrea angasi*	Tasmania	soft parts	W	(0.24-18.65)	Ratkowsky et al. (1974)
" "	Tasmania	"	W	10.7	Eustace (1974)
" "	"	"	W	(<2.0-2.5)	Thrower & Eustace (1973)
" "	Tasmania (polluted estuaries)	"	W	18.7±SD 4.2	"
" "	Australia (polluted bay)	"	D	(35.5-174.3)	Talbot et al. (1976)

Oyster *Ostrea edulis*	Great Britain	soft parts	W	1.2	Portmann & Yardley (1972)
" "	" "	"	D	(3.0-5.0)	Watling & Watling (1976a)
" "	South Africa	"	D	3.1	"
" "	Great Britain	"	W	0.5	Darracott & Watling (1975)
" "	" "	"	D	3.2	"
Dredge oyster *Ostrea lutaria*	New Zealand Tasman Bay	"	W	6.0	Brooks & Rumsby (1965)
" "	" " "	"	D	35.0 (max.)	"
" "	" " "	"	W	(0.12-9.0)	Nielsen (1975)
" "	Foveaux Strait & Stewart Is.	"	W	(1.40-7.90) 5.75	"
" "	" " "	"	D	(8.7-49.6)	"
" "	New Zealand	"	W	(0.12-7.9) 3.9	Nielsen & Nathan (1975)
Oyster *Ostrea sinuata*	New Zealand (control)	"	D	23.0	Brooks & Rumsby (1967)
" "	" " "	muscle	D	<10.0	"
" "	" " "	gill	D	<10.0	"
" "	" " "	visceral mass	D	12.0	"
" "	" " "	mantle	D	<10.0	"
" "	" " "	heart	D	36.0	"

Oyster *Ostrea sinuata*	New Zealand (100 hrs. in 50 ppm Cd seawater)	soft parts	D	100.0	Brooks & Rumsby (1967)
" "	" " "	white muscle	D	53.0	"
" "	" " "	striated muscle	D	25.0	"
" "	" " "	gill	D	360.0	"
" "	" " "	visceral mass	D	141.0	"
" "	" " "	mantle	D	83.0	"
" "	" " "	heart	D	285.0	"
" "	New Zealand (normal)	soft parts	D	(<10.0-43.0) 35.0	Brooks & Rumsby (1965)
" "	New Zealand Tasman Bay	muscle	D	207.0	"
" "	"	gill	D	20.0	"
" "	"	striated muscle	D	97.0	"
" "	"	visceral mass	D	61.0	"
" "	"	kidney	D	118.0	"
" "	"	heart	D	154.0	"
" "	"	shell	D	20.0	"
Pipi *Paphies australis*	New Zealand	soft parts	W	(0.12-0.14) 0.13	Nielsen & Nathan (1975)
Tuatua *Paphies subtriangulata*	" "	"	W	(0.29-0.34)0.29	"

Toheroa _Paphies ventricosa_	New Zealand	soft parts	W	(0.07-0.17) 0.11	Nielsen & Nathan (1975)
European limpet _Patella vulgata_	Great Britain	"	D	16.4	Mullin & Riley (1956)
" "	Great Britain (polluted)	"	D	(30.0-550.0)	Butterworth et al. (1972)
" "	" " "	"	W	(10.3-118.5)	Peden et al. (1973)
" "	Great Britain Somerset coast, Devon (control)	"	W	2.0	"
" "	Great Britain (from Watchet)	soft parts	W	(46.5-78.0)	"
" "	" " "	shell	W	(2.7-3.3)	"
" "	Great Britain Severn estuary	soft parts	D	(30.0-550.0)	Butterworth et al. (1972)
" "	Great Britain	"	D	(9.0-500.)	Nickless et al. (1972)
" "	Irish Sea	"	D	(2.8-35.0)	Preston et al. (1972)
" "	" "	"	D	31.0	Segar et al. (1971)
" "	" "	"	W	5.5	"
" "	Great Britain	"	D	(62.0-425.0)	Butterworth et al. (1972)
" "	" " "	"	D	(2.7-8.1)	Leatherland & Burton (1974)

Limpet *Patella vulgaris* (?)	Norway	soft parts	D	(15.0-17.0)	Stenner & Nickless (1974a)
Limpet *Patella sp.*	Great Britain	"	D	4.4	Dutton et al. (1973)
" "	" "		D	11.0	Stenner & Nickless (1974b)
" "	Great Britain (unpolluted)		D	(3.5-28.0) 11.0	"
" "	(transplanted to polluted Bristol Channel 3 mo.)		D	(100.0-300.0) 200.0	"
" "	Bristol Channel (local specimens)		D	(67.0-440.0) 220.0	"
Scallop *Pecten maximus*	Great Britain	shell	D	0.001	Mullin & Riley (1956)
" "	" "	gill	D	8.5	"
" "	" "	gonad	D	0.79	"
" "	" "	muscle	D	(1.86-1.95)	"
" "	" "	foot	D	6.3	"
" "	" "	digestive gland	D	532.0	"
" "	" "	mantle	D	5.8	"
" "	" "	renal organ	D	152.0	"
" "	" "	liver	A	(500.0-2,000.0)	Vinogradov (1953)
" "	Scotland		W	(0.55-1.03) 0.77	Topping (1973b)

Scallop *Pecten maximus*	Great Britain	soft parts	D	32.5	Bryan (1973)
" "	" "	"	W	4.1	"
" "	" "	kidney	D	79.0	"
" "	" "	"	W	15.5	"
" "	" "	digestive gland	D	321.0	"
" "	" "	"	W	91.7	"
" "	" "	soft parts	D	13.0	"
" "	" "	"	W	0.37	"
Scallop *Pecten novaezelandiae*	New Zealand	"	W	(0.14-0.28) 0.18	Nielsen & Nathan (1975)
" "	" "	stomach	W	(15.0-329.0) 137.0	"
" "	" "	gonad	W	(0.59-2.4)1.5	"
" "	" "	adductor muscle	W	(0.20-0.82)0.51	"
" "	" "	soft parts	D	(210.0-299.0) 249.0	Brooks & Rumsby (1965)
" "	" "	mantle	D	<20.0	"
" "	" "	gill	D	<20.0	"
" "	" "	muscle	D	<20.0	"
" "	" "	foot	D	<20.0	"
" "	" "	visceral mass	D	2,000.0	"
" "	" "	gonad	D	<20.0	"
" "	" "	shell	D	<20.0	"

Green-lipped mussel Perna canaliculus	New Zealand	soft parts	W	(0.10-1.0) 0.30	Nielsen & Nathan (1975)
South African brown mussel Perna perna	South Africa		W	0.29	Darracott & Watling (1975)
Pond snail Physa sp.	Illinois	soft parts	D	2.97±0.44	Anderson (1977)
Giant scallop Placopecten magellanicus	New York Sound		W	(0.04-0.234) 0.136±0.053	Zook et al. (1976)
" "	Delaware (ocean dump site, polluted)		D	(10.1-59.3) 20.9±6.8	Pesch et al. (1977)
Pleurobranchus plumula			A	400.0	Webb (1937)
Pleurocera sp.	Illinois	soft parts	D	2.31±0.03	Anderson (1977)
Polineces duplicata	N.W. Atlantic		D	(0.1-0.3) 0.2	Windom & Smith (1972b)
Polineces lewisii	California	soft parts	D	(0.3-1.6)	Schwimer (1973)
" "	"	anterior shell	D	1.4±1.9	"
" "	"	posterior shell	D	1.1±1.6	"
Burrowing clam Protothaca staminea	"	soft parts	D	5.7±SD 0.2	Graham (1972)
" "	"	shell	D	2.9±SD 0.1	"
Purpura lapillus			A	300.0	Webb (1937)

Clam Quadrula quadrula	Illinois	soft parts	W	(0.31-1.37) 0.56	Mathis & Cummings (1973)
Clam Rangia cuneata	Texas	"	D	0.5	Sims & Presley (1976)
Almejas Semele solida	Peru			0.45	Echegaray (1974)
Cuttlefish Sepia officinalis	Great Britain	gill	D	0.11	Leatherland & Burton (1974)
" "	" "	mantle	D	0.03	"
Solen marginatus	Spain & Portugal		D	0.9	Stenner & Nickless (1975)
Sphaerium sp.	Illinois	soft parts	D	1.99±0.19	Anderson (1977)
Surf clam Spisula solida	Spain & Portugal		D	0.7	Stenner & Nickless (1975)
Surf clam Spisula solidissima	Maryland	heart & tongue	W	(0.0-0.098) 0.061±0.03	Zook et al. (1976)
" "	E. United States	muscle	W	<0.25	Greig et al. (1977b)
Surf clam Spisula subtruncata	Spain & Portugal		D	(2.9-9.4)	Stenner & Nickless (1975)
Spider snail Strombus pugilis	Puerto Rico	shell	W	(4.2-4.6)	Lowman (1966)
" "	" "	muscle	W	(0.16-0.18)	"

Spider snail *Strombus pugilis*	Puerto Rico	muscle	D	(0.66-0.81)	Lowman (1966)
" "	" "	soft parts	W	(0.11-0.22)	
" "	" "	"	D	(0.73-1.4)	"
" "	" "	"	W	(0.18-0.32)	"
" "	" "	"	D	(1.1-1.4)	"
Clam *Strophitus sp.*	Illinois	"	D	2.52	Anderson (1977)
Squid *Symplectoteuthis oualaniensis*	Pacific Ocean	liver	D	(427.0-1,106.0) 782.0±255.0	Martin & Flegal (1975)
Short-necked clam *Tapes philippinarum*	Japan	soft parts	D	(0.474-0.832)	Ishio et al. (1973)
Little-neck clam *Tapes semidecussata*	California	"	D	9.6±SD 1.4	Graham (1972)
" "	"	shell	D	9.6±SD 1.4	"
Tegula funebralis	"	soft parts	D	(<0.1-4.8)	"
" "	"	shell	D	(<2.5-9.7)	"
Dog whelk (carocal) *Thais chocolata*	Peru			(0.09-7.9) 2.2	Echegaray (1974)
Dog whelk *Thais emarginata*	California	soft parts	D	13.5±SD 0.1	Graham (1972)
" "	"	shell	D	(<2.5-3.3)	"
Thracia distorta	Spain & Portugal		D	ND	Stenner & Nickless (1975)

Venus striatula	Spain & Portugal		D	(1.2-7.7)	Stenner & Nickless (1975)
Venerupis decussata	"		D	1.6	"
Venerupis rhomboides	"		D	(2.8-3.7)	"
"Cuttlefish"	Japan	edible parts	W	0.12-0.18	Yamagata & Shigematsu (1970)
"Octopus"	"	"	W	<0.01	"
"Clam"	"	"	W	0.16	"

CADMIUM IN ARTHROPODA(1)

CRUSTACEA

Species	Locality	Tissue	Analysis(2) PPM	Authority
Decapod Acanthonephyra eximea	N.W. Africa		D 3.0	Leatherland et al. (1973)
Copepod Acartia clausi	Greece	whole	D (0.49-0.84) 0.61±0.07	Zafiropoulos & Grimanis (1977)
Amphipod Amphipoda sp.	Norway		D (5.1-8.8)	Stenner & Nickless (1974a)
Sowbug Asellus aquaticus	Sweden		D (0.88-6.3)	Ljunggren et al. (1971)
Sowbug Asellus sp.	Illinois	whole	D 2.62±0.66	Anderson (1977)
Acorn barnacle Balanus amphitrites	Spain & Portugal		D (10.8-12.1)	Stenner & Nickless (1975)
Common barnacle Balanus balanoides	Great Britain		D (0.146-0.148)	Mullin & Riley(1956)

(1) Blank spaces indicate information not available or not applicable. ? indicates questionable data.

(2) W, D or A indicates on a Wet, Dry or Ashed basis. A single number indicates a single determination or mean. (x-y) indicates range of values, followed by the mean. ± Standard deviation (SD), standard error (SE), median, and geometric mean are indicated as reported. pCi/g = picocuries per gram.

Barnacle *Balanus perforatus*	Spain & Portugal		D	(4.5-5.8)	Stenner & Nickless (1975)
Ghost shrimp *Callianassa californiensis*	Los Angeles harbor		D	(0.7-1.9)	Emerson et al. (1976)
Blue crab *Callinectes sapidus*	N.W. Atlantic		D	(0.2-0.6) 0.4	Windom (1972)
" "	S. Florida		W	0.42	Ogden et al. (1974)
" "	Gulf of Mexico			(0.06-0.63)	Roberts et al. (1975)
" "	Texas	whole	D	0.1	Sims & Presley (1976)
" "	Chesapeake Bay	muscle	W	(0.02-0.158) 0.101±SD 0.047	Zook et al. (1976)
Crayfish *Cambarus sp.*	Illinois	whole	D	1.74±0.05	Anderson (1977)
Rock crab *Cancer irroratus*	E. United States	muscle	W	(0.08-1.0)	Greig et al. (1977b)
" "	" " "	digestive gland	W	(1.1-4.8)	"
" "	" " "	gill	W	(0.65-2.7)	"
" "	New York Bight	larvae	D	(1.2-2.6)	" (1977a)
Dungeness crab *Cancer megister*	Oregon		W	0.023±0.007	Caldwell & Buhler (1976)
Crab *Cancer pagurus*	Great Britain	muscle	D	0.153	Mullin & Riley (1956)

Crab *Cancer pagurus*	N.W. Atlantic		W	(0.03-3.42)	Windom (1972)
" "	Great Britain	whole	W	0.36±SD 0.42	Wright (1976)
" "	" "	muscle		(0.02-8.6)	Reynolds & Reynolds (1971)
" "	" "	muscle (male)		(0.17-8.2)	"
" "	" "	muscle (female)		(2.1-9.7)	"
" "	Scotland	muscle	W	(3.60-13.0)	Topping (1973a)
" "	"	all organs	W	(<0.2-2.1)	" (1973b)
" "	Great Britain North Devon		W	5.0	Peden et al. (1973)
Coastal green crab *Carcinus maenas*	Norway		D	(1.9-6.9)	Stenner & Nickless (1974a)
" "	"		D	<1.0	Lande (1977)
" "	Great Britain Somerset Coast (polluted)		W	(14.3-33.1)	Peden et al. (1973)
" "	Great Britain (after 7 wks. cleansing)		W	16.7	"
" "	Great Britain	carapace	W	2.63±SD 0.40	Wright (1976)
" "	" "	gill	W	0.63±SD 0.49	"
" "	" "	muscle	W	0.51±SD 0.18	"
" "	" "	hepato-pancreas	W	1.02±SD 0.62	"

Coastal green crab *Carcinus maenas*	Great Britain	gonad	W	0.92±SD 0.45	Wright (1976)
" "	" "	whole	W	0.98±SD 0.32	"
" "	" "	"	W	(0.75-3.00)	Wharfe & Van Den Broek (1977)
Barnacle *Chthamalus stellatus*	Spain & Portugal		D	(5.1-6.3)	Stenner & Nickless (1975)
Stridulating hermit crab *Clibanarius strigimanus*	Tasmania		W	<0.05	Eustace (1974)
Copepods (mixed spp.)	N.W. Atlantic		D	(0.9-3.1)1.7	Windom (1972)
Crab *Corystes cassivelaunus*	Great Britain		D	0.149	Mullin & Riley (1956)
Sand shrimp *Crangon vulgaris*	" "	whole	D	(4.9-124.8)	Hardisty et al. (1974b)
" "	" "	"	W	3.50±SD 2.10	Wright (1976)
Mycidacid *Eucopia sculpticauda*	N.W. Africa		D	2.0	Leatherland et al. (1973)
Hermit crab *Eupagurus bernhardus*	Spain & Portugal		D	(2.9-7.9)	Stenner & Nickless (1975)
Hermit crab *Eupagurus sp.*	Great Britain		D	1.31	Mullin & Riley (1956)
Euphausiacea *Euphausia pacifica*	Oregon	whole	W	(0.045-0.36)	Robertson et al. (1972)
" "	"	"	D	(0.33-2.8)	"

Gammarus sp.	Illinois	whole	D	<0.5	Anderson (1977)
Red crab *Geryon quinquedens*	Middle Atlantic Bight	muscle	W	<0.1	Greig et al. (1976)
" "	" " "	gill	W	0.81	"
American lobster *Homarus americanus*	Rhode Island (in 0.01 ppm Cd 21 days)	whole lobster	A	5.4	Eisler et al. (1972)
" "	" " "	"	W	0.72	"
" "	" " "	muscle	A	11.7	"
" "	" " "	"	W	0.25	"
" "	" " "	exo-skeleton	A	4.4	"
" "	" " "	"	W	0.88	"
" "	" " "	gill	A	31.3	"
" "	" " "	"	W	0.87	"
" "	Rhode Island (control)	viscera	A	37.5	"
" "	" " "	"	W	1.21	"
" "	" " "	whole lobster	A	5.3	"
" "	" " "	"	W	0.51	"
" "	" " "	muscle	A	10.0	"
" "	" " "	"	W	0.2	"
" "	" " "	exo-skeleton	A	4.1	"
" "	" " "	"	W	0.59	"
" "	" " "	gill	A	17.2	"
" "	" " "	"	W	0.49	"

American lobster Homarus americanus	Rhode Island (control)	viscera	A	33.8	Eisler et al. (1972)
" "	" " "	"	W	1.21	"
" "	United States		W	0.25	Schroeder & Balassa (1961)
" "	N.W. Atlantic		D	(<0.1-0.5) <0.2	Windom (1972)
European lobster Homarus vulgaris	Scotland	tail	W	(0.02-0.20) 0.08	Topping (1973b)
" "	"	liver	W	(3.60-8.75) 4.88	"
" "	"	claw	W	(0.05-0.15) 0.11	"
" "	"	gonad	W	(0.22-0.40) 0.30	"
" "	"	gill	W	(1.25-4.15) 2.50	"
" "	"	muscle	W	(<0.03-0.09)	"
Copepoda Labidocera acutifrons	N.W. Africa		D	9.8	Leatherland et al. (1973)
Leander serratus	Great Britain	whole	W	2.80±SD 0.91	Wright (1976)
Lysmata seticaudata	Mediterranean Sea	whole	W	0.41	Fowler & Benayoun (1974)
" "	"	"	D	1.7	"
" "	"	exo-skeleton	W	0.76	"
" "	"	"	D	3.15	"
" "	"	viscera	W	0.91	"

Lysmata seticaudata	Mediterranean Sea	viscera	D	2.76	Fowler & Benayoun (1974)
" "	"	muscle	W	0.09	"
" "	"	"	D	0.39	"
" "	"	eye	W	0.42	"
" "	"	"	D	1.26	"
" "	"	moult	W	1.26	"
" "	"	"	D	5.46	"
Freshwater prawn Macrobrachium rosenbergii	Thailand		W	0.06	Eustace (1974)
" "	"	muscle	W	0.15	"
Maia squinada	Spain & Portugal	brown muscle	D	0.46	Stenner & Nickless (1975)
" "	"	white muscle, shell	D	0.74	"
" "	"	white muscle, leg	D	0.69	"
Euphausid Meganyctiphanes norvegica	N.W. Africa		D	0.25	Leatherland et al. (1973)
Stone crab Menippe mercenaria	S. Florida		W	(0.05-0.76)	Ogden et al. (1974)
Crab Mursia gaudichaudii	S. California	gonad	W	(0.2-18.1) 5.89±SE 2.17	Fowler et al. (1975)
" "	" "	digestive gland	W	(0.2-38.4) 14.62±SE 4.8	"
" "	" "	muscle	W	(0.6-1.0) 0.8±SE 0.19	"

Lobster *Nephrops norvegicus*	Spain & Portugal	head	D	(3.4-6.3)	Stenner & & Nickless (1975)
" "	"	muscle	D	0.7	"
" "	"	tail muscle	D	3.3	"
" "	"	head & soft parts	D	32.0	"
Decapod *Oplophorus sp.*	N.W. Africa		D	13.0	Leatherland et al. (1973)
Beach hopper *Orchestoidea californiana*	California	whole body	D	(12.5-25.0)	Bender (1975)
Beach hopper *Orchestoidea corniculata*	"	"	D	(12.5-25.0)	"
Crayfish *Orconectes sp.*	Illinois	whole	D	1.60±0.50	Anderson (1977)
Hermit crab *Pagurus bernhardus*	Spain & Portugal		D	(2.9-7.9)	Stenner & Nickless (1975)
Shrimp *Palaemon (Leander) adspersus*				trace	Petkevich & Stepanyuk (1970)
Shrimp *Palaemon elegans*	Great Britain		D	0.31	Leatherland & Burton (1974)
Pink shrimp *Pandalus borealis*	Gulf of Mexico		W	(0.0-0.2) 0.069±0.066	Zook et al. (1976)
" "	Florida		W	0.09	Ogden et al. (1974)

Prawn *Pandalus jordanii*	Oregon	whole body	D	(0.18-0.96) 0.49	Cutshall & Holton (1972)
" "	"	edible part	D	(0.23-1.06)0.62	"
" "	"	"	D	(0.54-1.0) 0.82	Robertson et al. (1972)
Spiny lobster *Panulirus argus*	N.W. Atlantic		W	0.648	Windom & Smith (1972b)
" "	" "		D	2.4	"
Spiny lobster *Panulirus borealis*	Florida	tail muscle	W	(0.059-0.233) 0.133±SD 0.054	Zook et al. (1976)
Spiny lobster *Panulirus interruptus*	S. California	muscle	W	(0.07-0.18)	Vattuone et al. (1976)
" "	" "	hepatopancreas	W	(5.63-29.34)	"
Spiny lobster *Panulirus sp.*	S. Florida		W	(0.09-0.21)	Ogden et al. (1974)
" "	Atlantic Ocean		W	0.133±SD 0.054	Zook et al. (1976)
King crab *Paralithodes camschatica*	Alaska	leg muscle	W	(0.0-0.158) 0.072±SD 0.049	"
" "	"	body muscle	W	(0.02-0.189) 0.121±SD 0.047	"
Brown shrimp *Penaeus aztecus*	Gulf of Mexico		W	(0.0-0.119) 0.045±0.044	Roberts et al. (1975)
" "	Texas	whole	D	<0.4	Sims & Presley (1976)

Brown shrimp *Penaeus aztecus*	Texas	muscle	D	(0.05-0.33) 0.16	Horowitz & Presley (1977)
" "	"	exo-skeleton	D	(0.32-0.89) 0.50	"
" "	"	viscera	D	(1.40-3.50) 2.55	"
" "	"		W	(0.0-0.119) 0.045±0.044	Zook et al. (1976)
" "			W	(0.04-0.24) 0.09±SD 0.06	Sidwell & Loomis (1976)
Blue leg king prawn *Penaeus latisulcatus*	Thailand		W	0.19	Huschenbeth & Harms (1975)
Prawn *Penaeus merguiensis*	"		W	0.046	"
Tiger prawn *Penaeus monodon*	"		W	(0.1-0.13)	"
Green tiger prawn *Penaeus semisulcatus*	"		W	0.01	"
White shrimp *Penaeus setiferus*	Gulf of Mexico off Mississippi		W	(0.056-0.112) 0.079±SD 0.022	Zook et al. (1976)
" "	Florida		W	(0.0-0.076) 0.049±SD 0.023	"
" "	N.W. Atlantic			(<0.1-0.5) <0.2	Windom & Smith (1972b)
" "	S.E. United States		D	<0.2	Windom (1972)
Shrimp *Penaeus spp.*	United States		W	0.25	Schroeder & Balassa (1961)

Copepod Pleuromamma xiphias	Puerto Rico		A	(8.0-36.0)	Martin (1970)
" "	" "		W	(0.32-1.4)	"
" "	" "		D	(2.7-12.0)	"
Crayfish Procambarus gracilis	Indiana	tail	W	0.11±0.05	Yost et al. (1974)
Crayfish Procambarus sp.	Illinois	whole	D	2.77±0.04	Anderson (1977)
Kelp crab Pugettia producta	California	feces	A	(ND-3.2)	Booth & Knauer (1972)
Decapos Systellaspis debilis	N.W. Africa		D	13.0	Leatherland et al. (1973)
Fiddler crab Uca pugilator	Canada (exposed to 10 ppm Cd 72 hrs.)	gill		(10.2-92.0)	O'Hara (1973)
" "	" " "	hepato-pancreas		(6.5-200.2)	"
Copepod Undinula vulgaris	Puerto Rico		A	(7.0-27.0)	Martin (1970)
" "	" "		W	(0.21-1.1)	"
" "	" "		D	(2.3-9.0)	"

CADMIUM IN ARTHROPODA

INSECTA

DIPTERA					
Beach fly *Coelopa vanduzeii*	California	adult	D	(10.0-149.7)	Bender (1975)
" "	"	larva	D	35.0	"
Blood worm Chironomid larvae	Indiana	whole body	W	0.19	Yost et al. (1974)
" "	"	"	W	4.3	"
" "	Illinois	"	D	2.17	Anderson (1977)
Fruitfly *Drosophila athabasca*	Missouri (control)	"	D	(1.5-4.1) 2.8	Lower (1974)
Fruitfly *Drosophila robusta*	"	"	D	(1.2-2.3) 1.7	"
Fruitfly-3 species *Drosophila athabasca* *Drosophila melanogaster* *Drosophila robusta*	Missouri dist. from smelter (km):				
" " " " " "	" " " 0.16	"	D	8.1±0.9	"
" " " " " "	" " " 0.8	"	D	7.4±1.4	"
" " " " " "	" " " 1.6	"	D	4.9±0.2	"
" " " " " "	" " " 3.2	"	D	4.6±0.2	"
" " " " " "	" " " 8.0	"	D	3.8±0.6	"
" " " " " "	" " " 8.0 (hotspot)	"	D	9.7±1.2	"
" " " " "	" " "32.2	"	D	2.6±0.1	"
Beach fly *Fucellia rufitibia*	California	adult	D	(10.0-149.7)	Bender (1975)

Beach fly *Fucellia rufitibia*	California	larva	D	35.0	Bender (1975)
Midge *Glyptotendipes sp.*	Idaho	whole body		16.0	Funk et al. (1973)
Blackfly *Simulium sp.*	Illinois	larva, whole body	D	2.53	Anderson (1977)
COLEOPTERA					
Water beetle *Berosus sp.*	Illinois	larva	D	<0.5	Anderson (1977)
Water beetle *Dineutes sp.*	"	"	D	<0.5	"
Helophorus sp.	"	adult	D	<0.5	"
Lady bug beetle *Hippodamia sp.*	California	"	D	0.0	Bender (1975)
Tropisternus sp.	Illinois	larva	D	<0.5	Anderson (1977)
NEUROPTERA					
Alderfly *Sialis sp.*	Sweden	whole body	D	(0.17-11.0)	Ljunggren et al. (1971)
EPHEMEROPTERA					
Mayfly *Baetis sp.*	Idaho	"		70.0	Funk et al. (1973)
Mayfly *Baetis sp.*	Illinois	nymph	D	<0.5	Anderson (1977)
Mayfly *Hexagenia sp.*	"	"	D	<0.5	"

Mayfly Potamanthus sp.	Illinois	nymph	D 6.33	Anderson (1977)
Mayfly Stenonema sp.	"	"	D 5.55±0.46	"
ODONATA				
Damselfly Agrion splendens	Sweden	larva	D (5.8-9.7)	Ljundggren et al. (1971)
" "	"	adult	D (0.95-2.0)	"
Damselfly Amphiagrion sp.	Illinois	nymph	D <0.05	Anderson (1977)
Dragonfly Anax junius	"	"	D <0.05	"
Damselfly Argia sp.	"	"	D <0.05	"
Damselfly Senagrion sp.	Sweden	larva	D 1.5	Ljundggren et al. (1971)
ORTHOPTERA				
Cricket Acheta domestica	Tennessee (fed ^{109}CdO)		Retained 8% in 12 days	Andersen et al. (1973)
Cricket Pteronemobius sp.	Tennessee (^{109}Cd added to field)		0.42	"
TRICHOPTERA				
Caddis fly Cheumatopsyche	Illinois	larva	D 1.49±0.46	Anderson (1977)
Caddis fly Hydropsyche pellucidula	Sweden		D (0.28-1.5)	Ljundggren et al.(1971)

Caddis fly *Hydropsyche sp.*	Idaho	whole body	45.0	Funk et al. (1973)
Caddis fly *Hydropsyche sp.*	Illinois	larva	D 1.52±0.76	Anderson (1977)
HEMIPTERA				
Belostoma sp.	"	adult	D <0.05	"
Water boatman *Notonecta sp.*	"	"	D <0.05	"
Ranatra sp.	"	"	D <0.05	"
Sigara sp.	"	"	D <0.05	"
ARACHNIDA				
Wolf spider *Lycosa sp.*	Tennessee (fed on ^{109}CdO crickets for 30 days)		D 0.03	Andersen et al. (1973)

CADMIUM IN ECHINODERMATA[1]

Species	Locality	Tissue	Analysis[2] PPM	Authority
Sea star *Asterias rubens*	Great Britain		D 1.66	Mullin & Riley (1956)
" "	" "		D 1.6	Leatherland & Burton (1974)
" "	Sweden	without viscera	D (1.1-1.7)	Noddack & Noddack (1940)
" "			A 30.0	Webb (1937)
" "	Norway		D (10.0-18.0)	Stenner & Nickless (1974a)
" "	Spain & Portugal		D (0.6-12.0)	" (1975)
" "	Russia		D 1.1	Malyuga (1941)
Sea urchin *Brissopsis lyrifera*	Sweden	without viscera	D 0.03	Noddack & Noddack (1940)

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Red starfish *Coscinasterias calamaria*	Tasmania		W	0.6	Eustace (1974)
Asteroid *Echinus esculentus*	Great Britain		D	0.325	Mullin & Riley (1956)
Echinoid *Henricia sanguinclenta*	" "		D	1.12	"
Echinoid *Luidia ciliaris*	" "		D	14.8	"
Sea star *Marthasterias glacialis*	" "		D	1.46	"
Sand dollar *Mellita lata*	Puerto Rico		D	(4.0-4.7) 4.3	Lowman et al. (1966)
Brittle star *Ophiocomina nigra*	Great Britain		D	(0.94-0.963)	Mullin & Riley (1956)
" "			A	30.0	Webb (1937)
Sea urchin *Paracentrotus lividus*		ovary	A	30.0	"
Mud starfish *Patiriella regularis*	Tasmania		W	0.7	Eustace (1974)
Sea star *Pisaster brevispinus*	S. California	ray	D	(0.7-2.4)	Schwimer (1973)
" "	" "	gonad	D	0.6±0.8	"
" "	" "	stomach	D	(1.9-3.6)	"
" "	" "	hepatic caecum	D	(7.1-46.3)	"
Sea star *Pisaster sp.*	California (outfall, polluted)	"	D	46.3±20.6	Graham (1972)

Echinoid *Porania pulvillus*	Great Britain	skin, aboral surface	D	16.3	Mullin & Riley (1956)
" "	" "	"	A	26.9	"
" "	" "	inter-radial septa	D	13.1	"
" "	" "	"	A	17.7	"
Sea urchin *Psammechinus miliaris*	" "		D	(0.435-0.45)	"
Asteroid *Spatangus purpureus*	" "	without gut	D	0.24	"
" "	" "	gut and contents	D	0.81	"
Echinoid *Stichastrella rosea*	" "		D	6.3	"
Sea cucumber *Stichopus tremulus*	Sweden	without viscera	D	2.6	Noddack & Noddack (1940)
Purple sea urchin *Strongylocentrotus franciscanus*	California	gonad	W	0.57	Vattuone et al. (1976)
"Sea cucumber"	Japan	edible part	W	0.076	Yamagata & Shigematsu (1970)
"Sea urchin"	"	soft parts	W	0.076	"

CADMIUM IN LOWER INVERTEBRATES(1)

PROTOZOA

Species	Locality	Tissue	Analysis(2) PPM	Authority
Foraminifera *Ramulina sp.*	Great Britain	whole	D (2.18-2.24)	Mullin & Riley (1956)

CADMIUM IN LOWER INVERTEBRATES

CTENOPHORA

"Comb jellyfish"	New York Bight	whole	D (1.8-2.4)	Greig et al. (1977a)

CADMIUM IN LOWER INVERTEBRATES

SCYPHOZOA

Pelagia sp.	N.W. Africa	whole	D 5.3	Leatherland et al. (1973)

CADMIUM IN LOWER INVERTEBRATES

PORIFERA

Sponge *Halichondria sp.*	Sweden		D 1.10	Noddack & Noddack (1940

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Sponge Halichondria panicea	Great Britain	D	1.85	Mullin & Riley (1956)
" "	" "	D	0.85	Leatherland & Burton (1974)
Brittle cup sponge	Puerto Rico	D	(1.2-2.5) 2.1	Lowman et al. (1966)
Pliable cup sponge	" "	D	(2.0-4.5) 3.3	"
" " "	" "	W	(0.25-1.0) 0.61	"

CADMIUM IN LOWER INVERTEBRATES

COELENTERATA

Coral Alcyonium digitatum	Great Britain	D	1.15	Mullin & Riley (1956)
Cerianthus sp.	California	D	0.9	Emerson et al. (1976)
Jellyfish Cynaea capillata	Sweden	D	11.0	Noddack & Noddack (1940)
Coral Eusmilia fastigiata	Puerto Rico	D	(3.5-4.4) 4.0	Lowman et al. (1966)
Coral Meandrina neandrite	" "	D	(2.9-4.6) 4.2	"
Sea anemone Metridium dianthus	Sweden	D	0.4	Noddack & Noddack (1940)
Tealia felina	Great Britain	D	0.07	Leatherland & Burton (1974)

"jellyfish"	New York Bight		D	2.1	Greig et al. (1977a)

CADMIUM IN LOWER INVERTEBRATES

NEMERTEA

Lineus longissimus			A	20.0	Webb (1937)

CADMIUM IN LOWER INVERTEBRATES

TUNICATA

Ascidiacea sp.	Tasmania	whole	W	0.2	Eustace (1974)
Botryllus schlosseri	Great Britain		D	2.7	Leatherland & Burton (1974)
Ciona intestinalis	Sweden		D	0.6	Noddack & Noddack (1940)
" "	California	tunic	D	3.0	Emerson et al. (1976)
" "	"	internal organs	D	1.2	"
Pyrosoma sp.	N.W. Africa		D	0.44	Leatherland et al. (1973)
Sea squirt	San Diego Bay		W	(<0.1-0.5) 0.2	Seba (undated)

CADMIUM IN LOWER INVERTEBRATES

ANNELIDA

Earthworm Alabophera sp.	Tennessee	whole	D	(3.1-9.3) 5.7	Van Hook (1974)

Earthworm *Allolobophora chlorotica* *Allolobophora trapezpides* *Allolobophora turgida* *Lumbricus terrestris*	Maryland dist. from highway (meters):				Gish & Christensen (1973)
All species	" " 3		D	12.6	"
" "	" " 6.1		D	8.8	"
" "	" " 12.2		D	8.3	"
" "	" " 24.4		D	6.9	"
" "	" " 48.8		D	7.1	"
" "	Patuxent (control)		D	3.0	"
Cirriformia luxuriosa	California		D	(1.0-1.8)	Emerson et al. (1976)
Earthworm *Eisenia rosea*	Illinois (control)		D	2.0	Illinois (1972)
" "	Illinois (exp. 55 cm sludge)		D	18.0	"
" "	Illinois (exp. 110 cm sludge)		D	30.0	"
Leech *Erpobdella sp.*	Sweden		D	(0.34-1.7)	Lundggren et al. (1971)
Leech *Erpobdella sp.*	Illinois	whole	D	3.8±0.3	Anderson (1977)
Tubificid worm *Limnodrilus hoffmeisteri*	"	"	W	(0.5-3.2)1.1	Mathis & Cummings (1973)
Limnodrilus longissimus			A	0.02	Vinogradov (1953)

Earthworm *Lumbricus sp.*	Tennessee	whole	D	(3.1-9.3) 5.7	Van Hook (1974)
Lumbrineris sp.	California		D	1.3	Emerson et al. (1976)
Nephthys sp.	Tennessee		A	0.0	Vinogradov (1953)
Sandworm *Nereis diversicolor*	Great Britain		D	(0.08-3.6)	Bryan & Hummerstone (1973a)
" "	" "	whole	W	(0.2-0.5)	Wharfe & Van Den Broek (1977)
Notomastus tenuis	California		D	0.6	Emerson et al. (1976)
Earthworm *Octolasium sp.*	Tennessee	whole	D	(3.1-9.3) 5.7	Van Hook (1974)
Oligochaetes	Idaho	whole body	W	4.3	Funk et al. (1973)
"	Indiana	"		230.0	Yost et al. (1975)
Leech *Placobdella sp.*	Illinois	"	D	<0.5	Anderson (1977)
Polychaete *Sigambra tentacula*	California	"	D	(1.3-8.3)	Emerson et al. (1976)
Tubificid worm *Tubifex tubifex*	Illinois	"	W	(0.5-3.2) 1.1	Mathis & Cummings (1973)

CADMIUM IN HIGHER PLANTS(1)

Species	Locality	Tissue	Analysis(2) PPM	Authority
Mountain maple *Acer glabrum*	Rocky Mountains	leaf	A 1.6±3.06	Shacklette (1972)
" "	" "	stem	A 4.9±2.0	"
" "	" "	leaf	D 0.09	"
" "	" "	stem	D 0.17	"
Norway maple *Acer platanoides*	Connecticut	leaf	D (0.5-2.0) 1.0±SE 0.1	Smith (1973)
" "	"	twig	D (0.5-2.0)0.7 ±SE 0.1	"
Red maple *Acer rubrum*	United States	leaf	D 1.7	Hanna & Grant (1962)
" "	Tennessee	"	D 0.17	Van Hook et al. (1974)
" "	"	branch	D 0.34	"
" "	"	trunk	D 0.24	"

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Silver maple *Acer saccharinum*	United States	leaf	D	0.1	Hanna & Grant (1962)
Sugar maple *Acer saccharum*	United States	"	D	0.21	"
" "	Connecticut	"	D	(0.5-1.5) 1.0±SE 0.1	Smith (1973)
" "	"	twig	D	(0.5-1.5) 0.8±SE 0.1	"
" "	New Hampshire & Vermont	twig & leaf	D	(0.0-5.0)	"
Milfoil *Achillea millefolium*	Germany	leaf	D	0.02	Ernst (1975)
Bunch grass *Agropyron sp.*	Idaho (near PO_4 processing plant)		D	(2.0-250.0)	Gough & Severson (1976)
Onion *Allium cepa*	United States	bulb	W	0.01	Schroeder et al. (1967)
" "	Montana	"	W	(0.1-0.5)	Hindawi & Neely (1972)
" "	Canada	leaf	D	(0.63-1.5)	Hutchinson et al. (1974)
" "	"	bulb	D	(0.25-3.1)	"
" "	"	"	D	(0.93-1.4)	"
" "	Great Britain	"	W	(0.01-0.09) 0.04	Thomas et al. (1972)
" "	Czechoslavakia	"	W	0.047±SE 0.003	Lener & Bibr (1971)
" "	Romania	"	W	0.0077	Rautu & Sporn (1970)

Onion *Allium cepa*	Japan	bulb	W	0.012	Ishizaki et al. (1970a)
" "	"	"	W	(0.003-0.018)	Yamagata & Shigematsu (1970)
" "	Germany (control)	"	W	0.08±0.06	Anke et al. (1976)
" "	Germany (polluted)	"	W	0.4±0.19	"
Welsh onion *Allium fistulosa*	Japan (500 m from refinery)		D	14.0	Kobayashi (1972)
" "	Japan (unpolluted)		D	1.0	"
Leek *Allium porrum*	Great Britain		W	(0.02-0.09) 0.04	Thomas et al. (1972)
Garlic *Allium sativum*	Czechoslavakia		W	0.077±SE 0.001	Lener & Bibr (1971)
Ragweed *Ambrosia artemisiifolia*		leaf & stem	D	0.46	Prince (1957)
Ragweed *Ambrosia elatior*	(in 100 ppm Cd solution)	leaf		480.0	Illinois (1972)
" "	(in 250 ppm Cd solution)	"		3,080.0	"
" "	(in 500 ppm Cd solution)	"		4,700.0	"
Pineapple *Ananas comosus*		fruit (canned)		0.059	USHEW (1975)
Big bluestem grass *Andropogon gerardii*	Missouri	stem & leaf	A	0.5	Shacklette (1972)
" "	"	"	D	0.03	"

Bluestem grass *Andropogon sp.*	Indiana		D	0.55	Yost et al. (1975)
" "	Tennessee		D	0.21±SD 0.06	Huckabee & Blaylock (1973)
Anemone *Anemone cylindrica*	Indiana		D	1.2	Yost et al. (1975)
Celery *Apium graveolans dulce*	(Cd in soil 0, control)	stalk	D	1.26	Haghiri (1973)
" " "	(Cd in soil 2.5 ppm)	"	D	5.83	"
" " "	(Cd in soil 10.0 ppm)	"	D	14.87	"
" " "	(Cd in soil 0, control)	leaf	D	0.83	"
" " "	(Cd in soil 2.5 ppm)	"	D	3.77	"
" " "	(Cd in soil 10.0 ppm)	"	D	10.77	"
" " "	Czechoslavakia	stalk	W	0.058±SE 0.013	Lener & Bibr(1971)
" " "	Great Britain		W	(<0.01-0.05) 0.04	Thomas et al. (1972)
" " "	Ontario	leaf	D	(1.14-2.02)	Hutchinson et al. (1974)
" " "	"	root	D	(0.73-4.3)	"
Apios americana	Indiana		D	4.4	Yost et al. (1975)
Kinnikinnik *Arctostaphylos uva-ursi*	Colorado		A	5.0 geom. mean	Shacklette (1972)
" "	"	stem	D	0.23	"

Kinnikinnik *Arctostaphylos uva-ursi*	Colorado	leaf	D	0.21	Shacklette (1972)
Pink *Armeria calaminaria*	Germany	"	D	1.1	Ernst (1975)
Big sagebrush *Artemisia tridentata* ssp. *tridentata*	Idaho (dist. from PO_4 factories):				Gough & Severson (1976)
" " "	" " 3 km upwind		D	(23.0-38.0)	"
" " "	" " 3 km downwind		D	(78.0-130.0)	"
Asparagus *Asparagus officinalis*	Japan (500 m from refinery)		D	9.0	Kobayashi (1972)
Aster *Aster sp.*	Indiana		D	2.42	Yost et al. (1975)
Oats *Avena sativa*				(increased Cd in soil increased Cd in root but not in top)	John et al. (1972)
" "	Montana		W	0.6	Hindawi & Neely (1972)
" "	Sweden		W	(0.005-0.048)	Kjellstrom et al. (1974)
" "	Sweden (4 km NW Cd alloy plant)		W	(0.081-0.108)	"
" "	Canada	leaf	D	0.8	Hutchinson et al. (1974)
" "	"	root	D	2.0	"
" "	"	grain	D	0.6	"

Oats *Avena sativa*		grain	D	3.9	John (1973)
" "	Germany (control)	"	W	0.04±0.04	Anke et al. (1976)
" "	Germany (polluted)	"	W	0.21±1.48	"
Beet *Beta vulgaris*	Montana		W	(0.1-2.5)	Hindawi & Neely (1972)
Swiss chard *Beta vulgaris cicla*	Maryland (control)		D	1.2	Furr et al. (1976)
" " "	Maryland (grown on sludge fortified soil)		D	(3.3-4.1)	"
Birch *Betula sp.*	S.W. Missouri (on mineralized ground)	leaf	D	18.0	Cannon (1974)
" "	" " " "	twig	D	14.0	"
" "	" " " "	wood	D	6.5	"
" "	" " " "	bark	D	21.0	"
Rutabaga *Brassica napobrassica*	Montana		W	0.3	Hindawi & Neely (1972)
Kale *Brassica oleracea acephala*			D	1.0	Shacklette (1972)
" " "			D	0.89±0.16	Cheuca et al. (1969)
" " "	(polarographic)		D	1.0±0.1	Shacklette (1972)
" " "	(neutron activation)		D	0.384	"

Cauliflower *Brassica oleracea botrytis*	Canada	leaf	D	(0.55-1.03)	Hutchinson et al. (1974)
" " "	"	root	D	(0.49-1.3)	"
" " "	"	head	D	0.52	"
" " "	"	leaf	D	4.8	John (1973)
" " "	"	root	D	1.8	"
Cabbage *Brassica oleracea capitata*	Montana		W	(<0.05-0.4)	Hindawi & Neely (1972)
" " "	Japan	leaf	W	(0.12-0.022)	Yamagata & Shigematsu (1970)
" " "	United States	"	W	0.07	Schroeder et al. (1967)
" " "	Romania	"	W	0.0	Rautu & Sporn (1970)
" " "	Japan	"	W	0.009	Ishazaki et al. (1970)
" " "	United States	"	W	0.034	Fulkerson & Goeller (1973)
" " "	Great Britain	"	W	(0.01-0.15) 0.04	Thomas et al.(1972)
" " "	Canada	"	D	(0.6-2.3)	Hutchinson et al. (1974)
" " "	"	root	D	(0.48-2.6)	"
" " "	Japan (1200 m from refinery)	outer leaf	D	7.0	Kobayashi (1972)
" " "	" " " "	inner leaf	D	3.0	"

Cabbage *Brassica oleracea capitata*	Montana	leaf	D	12.0	Gordon (1972)
" " "	Japan	head	W	0.012	Yamagata & Shigematsu (1970)
Brussels sprouts *Brassica oleracea gemmifera*	Great Britain		W	(0.01-0.11) 0.03	Thomas et al. (1972)
Kohlrabi *Brassica oleracea gongyloides*	Montana		W	(0.1-0.2)	Hindawi & Neely (1972)
" " "	United States		W	0.09	Schroeder et al. (1967)
" " "	" "		W	0.052	Fulkerson & Goeller (1973)
" " "	Germany (control)		W	0.08±0.05	Anke et al. (1976)
" " "	Germany (polluted)		W	0.42±0.33	"
Broccoli *Brassica oleracea italica*		leaf	D	2.7	John (1973)
" " "		root	D	6.5	"
Turnip *Brassica rapa*	Japan (450 m from refinery)	root	D	5.0	Kobayashi (1972)
" "	" " "	leaf	D	15.0	"
" "	Germany (control)	"	W	0.19±0.12	Anke et al. (1976)
" "	Germany (polluted)	"	W	5.87±3.75	"

Scotch heather *Calluna vulgaris*	Sweden			0.73 g Cd/ha	Tyler et al. (1973)
Tea *Camellia sinensis*		Japanese green tea leaf	W	2.5	Schroeder & Balassa (1961)
" "	United States	instant tea	W	0.008	"
" "	Germany			(0.29-0.32)	Kropf & Geldmacher (1968)
" "		infusion	W	0.01	Schroeder et al. (1967)
" "		instant	W	0.008	"
Bluebell *Campanula rotundifolia*	Germany	leaf	D	0.95	Ernst (1975)
Pepper *Capsicum frutescens*	(Cd in soil 0, control)		D	0.76	Haghiri (1973)
" "	(Cd in soil 2.5 ppm)		D	3.82	"
" "	(Cd in soil 10.0 ppm)		D	6.28	"
" "	Missouri			<0.5	Missouri Univ. (1972)
" "	Australia		D	0.63	Beavington (1975)
Sedge *Carex stricta*	Indiana		D	0.47	Yost et al. (1975)
Shagbark hickory *Carya ovata*	Missouri	stem	D	1.27	Shacklette (1972)
Hickory *Carya spp.*	Tennessee	leaf	D	0.38	Van Hook et al. (1974)

Hickory *Carya spp.*	Tennessee	twig	D	0.93	Van Hook et al. (1974)
" "	"	branch	D	0.39	"
" "	"	bole	D	0.33	"
" "	"	root	D	0.33	"
" "	"	O_1 litter	D	0.62	"
" "	"	O_2 litter	D	0.20	"
Sticky laurel *Ceanothus velutinus*	Colorado	branch	D	0.03	Shacklette (1972)
Coontail *Ceratophyllum demersum*	Michigan		D	(0.048-0.291) 0.164±0.036	Mathis & Kevern (1975)
Rabbit brush *Chrysothamnus sp.*	Montana (leaves collected Cd in airborne dust)				Munshower (1972)
Tangarine *Citrus reticulata*	United States		W	0.02	Schroeder et al. (1967)
" "	Japan		W	0.003	Ishazaki et al. (1970a)
Orange *Citrus sinensis*	United States	fruit		(0.0-0.43) 0.04	US HEW (1975)
" "	Japan	"	W	0.002	Yamagata & Shigematsu (1970)
Yellow clintonia *Clintonia borealis*	Canada dist. from smelter (km):				LeBlanc et al. (1974)
" "	" " "	1.1	D	4.6	"
" "	" " "	1.9	D	15.7	"

Yellow clintonia *Clintonia borealis*	Canada (dist. from smelter (km)):				LeBlanc et al. (1974)
" "	" " "	3.0	D	5.0	"
" "	" " "	5.0	D	3.2	"
" "	" " "	6.3	D	2.8	"
" "	" " "	8.3	D	<0.4	"
" "	" " "	11.0	D	<0.4	"
Coffee *Coffea arabica*		seed (ground)	W	0.32	Schroeder et al. (1967)
" "		instant	W	0.006	"
" "		instant, dried	W	2.27	"
" "		ground	W	0.35	"
Coreopsis *Coreopsis lanceolata*	Indiana		D	4.4	Yost et al. (1975)
Coreopsis *Coreopsis tripteris*	"		D	4.85	"
Dogwood *Cornus florida*	Tennessee	twig	D	0.40	Van Hook et al. (1974)
" "	"	branch	D	0.04	"
" "	"	bole	D	0.31	"
" "	"	leaf	D	1.10	"
Hawthorn *Crataegus monogyna*	Great Britain	unwashed leaf	D	6.04±0.98	Little (1973)
Sugi, Japanese cedar *Cryptomeria japonica*	Japan (smelting area)			High levels of Cd in rings from 1910-1943	Ishizaki et al. (1970a)

Cucumber *Cucumis sativus*	Great Britain		W	0.01	Thomas et al. (1972)
Pumpkin *Cucurbita pepo*	Japan		D	<0.1	Kobayashi (1972)
Curly top grass *Danthonia spicata*	United States			0.028	Williams & David (1973)
Carrot *Daucus carota*	United States		W	0.3	Schroeder et al. (1967)
" "	New York	root	D	0.96	Cannon (1969)
" "	Great Britain	"	W	(0.09-0.22) 0.13	Thomas et al. (1972)
" "	Czechoslavakia	"	W	0.086±SE 0.024	Lener & Bibr(1971)
" "	Japan		W	0.041	Ishizaki et al. (1970)
" "	"	"	W	0.05	Yamagata & Shigematsu (1970)
" "	Japan (700 m from refinery)	"	D	10.0	Kobayashi (1972)
" "	Canada	leaf	D	(0.99-1.5)	Hutchinson et al. (1974)
" "	"	root	D	(0.43-0.98)	"
" "	New York	"	D	0.96	Cannon (1969)
" "	Kansas (smelter)		D	8.0	Lagerwerff & Brower (1974)
" "	Washington, D.C.		D	1.5	"

Hairgrass Deschampsia flexuosa	Sweden (polluted area)	leaf	D	7.6	Tyler (1972)
" "	" " "	root	D	11.0	"
" "	" " "	leaf litter	D	12.0	"
Crowberry Empetrum nigrum	Sweden			0.1 g/ha	"
Horsetail rush Equisetum arvense	Indiana		D	2.0	Yost et al. (1975)
Horsetail Equisetum fluviatile	Nova Scotia (above ground)		D	(0.92-6.08)	Ray & White (1976)
" "	Nova Scotia (below ground)		D	(3.59-5.54)	"
Scouring rush Equisetum hyemale	Indiana		D	0.87	Yost et al. (1975)
Heath Erica tetralix	Sweden			0.69 g/ha	Tyler (1972)
Eryngo Eryngium yuccifolium	Indiana		D	0.37	Yost et al. (1975)
Euphorbia Euphorbia corollata	"		D	0.86	"
Euphrasia stricta	Germany	leaf	D	0.4	Ernst (1975)
Beech Fagus grandifolia	United States		W	0.04	Schroeder et al. (1967)
Fescue grass Festuca ovina	Germany	leaf	D	0.13	Ernst (1975)

Red fescue grass *Festuca rubra*	Wales dist. downwind from industry (km):			Goodman & Roberts (1971)
" "	" " " 1.5	D	40.0	"
" "	" " " 3.0	D	9.0	"
" "	" " " 5.0-6.0	D	(2.5-3.0)	"
" "	" " " 6.5	D	0.7	"
" "	" " " 16.0	D	(1.3-1.4)	"
" "	Wales (uncontaminated, 18 km upwind)	D	0.8	"
" "	Wales (uncontaminated grass hay)	D	1.0	"
" "	Wales (contaminated grass hay)	D	9.0	"
" "	Tennessee (^{109}Cd added to area)	D	(0.002-0.01)	Andersen et al. (1973)
" "	Wales time after closing Zn/Pb smelter (mo.):			Roberts & Goodman (1973)
" "	" " " 0	D	48.0	"
" "	" " " 3	D	11.0	"
" "	" " " 9	D	9.0	"
" "	" " " 11	D	7.0	"
Tall fescue *Festuca sp.*	Maryland dist. from road (m):			Lagerwerff & Specht (1970)
" "	" " " 8	D	(0.75-0.95)	"
" "	" " " 16	D	(0.63-0.73)	"

Tall fescue Festuca sp.	Maryland dist. from road (m):				Lagerwerff & Specht (1970)
" "	" " "	32	D	(0.48-0.50)	"
" "	Tennessee		D	0.279±SD 0.5	Huckabee & Blaylock (1973)
Strawberry Fragaria virginiana	Indiana		D	0.89	Yost et al. (1975)
Bedstraw Galium obtusum	"		D	1.8	"
Soybean Glycine max	(Cd in soil 10 ppm)	plant top	D	13.0	Haghiri (1973)
" "	(Cd in soil 50 ppm)	"	D	24.0	"
" "	(Cd in soil 100 ppm)	"	D	26.0	"
" "	Ohio (sludge-treated soil)	bean		2.4	Kirkham (1974)
" "	" " "	leaf		10.2	"
" "	(with Cd dust in soil 29 ppm + lime)		D	4.7	Andersen et al. (1973)
" "	(58 ppm Cd + lime)		D	5.3	"
" "	(116 ppm Cd + lime)		D	13.0	"
" "	(29 ppm Cd, no lime)		D	17.0	"
" "	(58 ppm Cd, no lime)		D	23.0	"
" "	(116 ppm Cd, no lime)		D	36.0	"
" "	(control + lime)		D	1.5	"
" "	(control, no lime)		D	1.0	"

Soybean *Glycine max*	Kansas (2 km from smelter)	stem	D	2.9	Lagerwerff et al. (1973)
" "	" " "	leaf	D	5.8	"
" "	" " "	pod	D	1.0	"
Sunflower *Helianthus divaricatus*	Indiana		D	1.72	Yost et al. (1975)
Sunflower *Helianthus occidentalis*	"		D	5.16	"
Sunflower *Helianthus sp.*	Montana	leaf	W	1.0	Hindawi & Neely (1972)
Hoeleria cristata	Indiana		D	1.01	Yost et al. (1975)
Barley *Hordeum vulgare*	Japan (0.4 to 2.5 km from mine refinery)			6.8	Kobayashi et al. (1970)
" "	" " "			4.0	Kobayashi et al. (1970)
" "	Montana	grain	W	(0.1-1.2)	Hindawi & Neely (1972)
" "	"	leaf	W	6.3	"
" "	Sweden (1963-1971)	grain	W	(0.025-0.045)	Kjellström et al. (1975)
Hypoxis hirsuta	Indiana		D	7.7	Yost et al. (1975)
American holly *Ilex opaca*	United States	leaf	D	5.2	Hanna & Grant (1962)

Rush *Juncus sp.*	Indiana		D	0.39	Yost et al. (1975)
Juniper *Juniperus communis* ssp. *nana*	Colorado	leaf	D	0.11	Shacklette (1972)
" " "	"	branch	D	0.26	"
Red cedar *Juniperus virginianus*	Missouri	stem & leaf	D	0.1	"
" "	Missouri (near lead smelter ore trucks)		A	9.3	Connor et al. (1971)
" "	Missouri (control)		A	2.8	"
" "	Missouri		A	(1.7-1.8)	"
" "	"		D	(0.098-0.11)	Connor et al. (1970)
" "	"		D	0.56 max.	"
Mountain laurel *Kalmia latifolia*	United States	leaf	D	0.43	Hanna & Grant (1962)
Lettuce *Lactuca sativa*	(control)		D	2.80	Haghiri (1973)
" "	(Cd in soil 2.5 ppm)		D	11.50	"
" "	(Cd in soil 10.0 ppm)		D	27.10	"
" "	Missouri (smelter town)	root	D	(2.0-98.3)	Hemphill et al. (1973)
" "	" " "	leaf	D	(3.29-34.5)	"
" "	United States			0.062±0.124	US HEW (1975)

Lettuce Lactuca sativa	Canada	leaf	D	1.9	Hutchinson et al. (1974)
" "	"	root	D	2.3	"
" "	Australia (near Cu smelter)	leaf	D	4.5±1.2	Beavington (1975)
" "	Montana (grown in smelter area)	"	D	(4.0-28.0)10.6	Gordon (1972)
" "	Montana (grown at Missoula)	"	D	(<1.0-1.2)	"
" "	United States		D	(0.3-0.5)	Shacklette (1972)
" "	Kansas-smelter		D	3.8	Lagerwerff & Brower (1974)
" "	Washington, D.C.		D	0.84	"
Duckweed Lemna minor	Connecticut (polluted lake)	whole plant	D	17.0?	Cowgill (1970)
Duckweed Lemna valdiviana	Canada			7.2	Hutchinson & Czyrska (1972)
Blazing star Liatris spicata	Indiana		D	4.79	Yost et al. (1975)
Orchid Liparis lilifolia	"		D	1.9	"
Sweet gum Liquidambar styraciflua	Missouri	stem	D	0.41	Shacklette (1972)
Tulip poplar Liriodendron tulipifera	Tennessee	leaf	D	0.29	Van Hook et al. (1974)
" "	"	twig	D	0.05	"

Tulip poplar *Liriodendron tulipifera*	Tennessee	branch	D	0.03	Van Hook et al. (1974)
" "	"	bole	D	0.03	"
" "	"	root	D	0.15	"
" "	"	O_1 litter	D	0.79	"
" "	"	O_2 litter	D	1.00	"
Lithospermum canescens	Indiana		D	0.94	Yost et al. (1975)
Perennial ryegrass *Lolium perenne*	Great Britain (near smelter)		D	50.0 (max.)	Little & Martin (1972)
Birdsfoot trefoil *Lotus corniculatus*	Germany	leaf	D	0.02	Ernst (1975)
Lupine *Lupinus perennis*	Indiana		D	0.7	Yost et al. (1975)
Tomato *Lycopersicum esculentum*	Ohio (sludge-treated soil)	fruit		0.5	Kirkham (1974)
" "	" " "	leaf		6.1	"
" "	United States	fruit	W	0.03	Schroeder et al. (1967)
" "	Netherlands	"	W	0.25	"
" "	Italy	fruit (canned)		(0.02-0.05)	Nilsson (1970)
" "	Japan (near smelter)		D	2.0	Kobayashi (1972)
" "	Japan	fruit	W	0.032	Ishizaki et al. (1970)

Tomato Lycopersicum esculentum	Romania	fruit	W	0.013	Rautu & Sporn (1970)
" "	Kansas (smelter area)		D	1.8	Lagerwerff & Brower (1974)
" "	Washington, D.C.		D	0.28	"
" "	Great Britain		W	(0.01-0.08) 0.02	Thomas et al. (1972)
" "	Missouri	fruit		(<0.5-0.75)	Missouri Univ. (1972)
" "	Germany (control)	fruit	W	0.03±0.01	Anke et al. (1976)
" "	Germany (polluted)	"	W	0.18±0.18	"
Apple Malus malus	Canada		leaves sprayed with $CdCl_2$ transferred to fruit		Ross & Stewart (1969)
" "	"		higher Cd content in peel than pulp		"
" "	United States	juice		(0.0-0.264) 0.023	US HEW (1975)
" "	" "	apple-sauce		(0.0-0.18) 0.007	"
" "	Montana		W	(<0.05-0.1)	Hindawi & Neely (1972)
" "	Japan	fruit	W	(0.002-0.004)	Yamagata & Shigematsu (1970)
" "	Romania	"	W	0.0065	Rautu & Sporn (1970)

Apple *Malus malus*	Japan	fruit	W	0.004	Ishazaki et al. (1970)
" "	Connecticut	blossom	D	24.0	Cowgill (1970)
" "	Germany (control)	fruit	W	0.07±0.09	Anke et al. (1976)
" "	Germany (polluted)	"	W	0.11±0.07	"
Alfalfa *Medicago sativa*	Arizona	leaf	D	(0.021-0.035)	Shacklette (1972)
" "	United States	"	D	(0.02-2.4)	"
" "	Utah	"	D	0.026	"
" "	Montana	"	D	1.0	Gordon (1972)
" "	Montana (near smelter)		W	(0.3-3.2)	Hindawi & Neely (1972)
" "	Missouri (1.7 km from smelter)		D	2.5	Lagerwerff et al. (1972)
Peppermint *Mentha piperita*			^{115}Cd taken up in plants readily		Gordee et al. (1960)
Minuartia verna	Germany	leaf	D	0.65	Ernst (1975)
Horsemint *Monarda fistulosa*	Indiana		D	0.93	Yost et al. (1975)
Mulberry *Morus sp.*	Japan dist from refinery (km):				Kobayashi (1972)
" "	" " 0.4	leaf	D	17.0	"

Mulberry *Morus sp.*	Japan dist from refinery (km):			Kobayashi et al. (1972)
" "	" " 1.0	leaf	D 7.0	"
" "	" " 2.5	"	D 3.3-4.0	"
" "	Japan (control)	"	D 1.0	"
Banana *Musa acuminata*		fruit	W 0.03	Schroeder et al. (1967)
" "		"	W 0.011	Ishazaki et al. (1970)
Water milfoil *Myriophyllum spicatum*			Coefficient of accumulation was 10,110 (highest tested)	Makhonina & Gileva (1968)
Naiad *Najas guadulepensis*	Oklahoma (control)		A 7.1±SD 1.7	Cearley & Coleman (1974)
" "	Oklahoma (Cd added 0.007 ppm)		A 60.4±SD 1.7	"
" "	Oklahoma (Cd added 0.9 ppm)		A 4,357.9±SD 89.9	"
Tobacco *Nicotiana tobacum*			(70% of Cd in leaf passes into smoke in cigarette)	Nandi et al. (1969)
" "	Virginia		2.01	Schroeder & Balassa (1961)
" "	Greece		0.89	"
Water lily *Nuphar luteum*	Sweden		D (0.52-1.8)	Ljundggren et al. (1971)

Water lily Nuphar luteum	Illinois	stem	D	(0.048-0.175) 0.102	Mathis & Kevern (1975)
" "	"	root	D	(0.038-0.049) 0.041	"
" "	"	leaf	D	(0.069-0.928) 0.291	"
Blackgum Nyssa sylvatica	Tennessee	branch	D	0.06	Van Hook et al. (1974)
" "	"	leaf	D	0.38	"
" "	"	bole	D	0.12	"
Olive Olea europea	Spain			1.22	Schroeder et al. (1967)
Rice Oryza sativa	Japan			polished has3.5-4 x Cd of unpolished grain.	Moritsugu & Kobayashi (1964)
" "	"	grain (polished)	W	0.06	Schroeder et al. (1967)
" "	"	grain (brown)	W	0.04	"
" "		root		(0.19-0.27)	Williams & David (1973)
" "		straw		(0.05-0.1)	"
" "		grain		(0.01-0.02)	"
" "	Japan	"		1.0	Yamagata & Shigematsu (1970)
" "	"	"		(0.18-1.19)	Kobayashi (1970)

Sourwood Oxydendron arboreum	Tennessee	twig	D	0.21	Van Hook et al. (1974)
" "	"	leaf	D	0.84	"
" "	"	branch	D	0.24	"
" "	"	bole	D	0.15	"
Parsnip Pastinica sativa	United States		W	0.14	Schroeder & Balassa (1961)
" "	United States (control)		W	3.0	Schroeder & Balassa (1963)
" "	United States (fertilizer with 7.25 ppm of Cd is a Cd accumulator)				"
" "	Canada	leaf	D	(0.6-0.9)	Hutchinson et al. (1974)
" "	"	root	D	(1.1-3.1)	"
Princess tree Paulownia tomentosa	Tokyo (in city)	leaf		(0.7-1.3)	Maeno (1971)
Lousewort Pedicularis canadensis	Indiana		D	2.5	Yost et al. (1975)
Parsley Petroselinum crispum	Czechoslavakia	leaf	W	0.088	Lener & Bibr (1971)
Canary grass Phalaris sp.	United States			(0.02-0.048)	Williams & David (1973)
Bean Phaseolus spp.	" "		W	(0.01-0.04)	Corneliussen (1972)

Bean *Phaseolus* *spp.*	United States	fresh	W	0.01	Schroeder et al. (1967)
" "	" "	canned	W	0.03	"
" "	Missouri (near smelter)	root	D	(0.76-39.8) 7.05	Hemphill et al. (1973)
" "	" " "	pod	D	(0.5-8.5) 2.36	"
" "	United States			0.018	US HEW (1975)
" "	" "			0.0	
" "	" "			<0.5	Missouri Univ. (1972)
" "	Kansas (smelter area)		D	0.73	Lagerwerff & Brower (1974)
" "	Washington, D.C.		D	0.24	"
" "	Montana		W	0.1	Hindawi & Neely (1972)
Kidney bean *Phaseolus* *vulgaris*				(Uptake of Cd was 10x with iron chelate at pH 4.6)	Francis & Rush (1973)
" "	United States		W	0.07	Schroeder et al. (1967)
" "	Japan		W	0.019	Ishizaki et al. (1970)
Phlox *Phlox* *pilosa*	Indiana		D	0.75	Yost et al. (1975)
Ground cherry *Physalis* *heterophylla*	"		D	1.0	"
Norway spruce *Picea* *abies*	Connecticut	leaf	D	(0.5-1.0)0.7 ±SE 0.2	Smith (1973)

Norway spruce *Picea abies*	Connecticut	twig	D	(0.5-1.0) 0.8±SE 0.2	Smith (1973)
" "	Sweden	root	D	(1.5-2.7)	Tyler (1972)
" "	"	wood	D	<0.1	"
" "	"	bark	D	2.5	"
" "	"	twig	D	(2.7-5.4)	"
" "	"	needle	D	(0.4-1.0)	"
Englemann's spruce *Picea englemannii*	Colorado	stem	D	0.22	Shacklette (1972)
" "	"	leaf	D	0.05	"
Black spruce *Picea mariana*	Quebec dist. from smelter (km):				Le Blanc et al. (1974)
" "	" " 0.5	leaf	D	0.7	"
" "	" " 1.1	"	D	2.3	"
" "	" " 1.9	"	D	2.1	"
" "	" " 3.0	"	D	1.1	"
" "	" " 4.8	"	D	1.7	"
" "	" " 6.3	"	D	<0.4	"
" "	" " 8.3	"	D	<0.4	"
" "	" " 11.0	"	D	<0.4	"
Colorado blue spruce *Picea pungens*	Colorado	stem	D	0.03	Shacklette (1972)
Pieris japonica	United States	leaf	D	1.2	Hanna & Grant (1962)
Lodgepole pine *Pinus contorta* var. *latifolia*	Colorado	stem	D	0.38	Shacklette (1972)

Lodgepole pine *Pinus contorta* var. *latifolia*	Colorado	leaf	D	0.21	Shacklette (1972)
Short-leaf pine *Pinus echinata*	Tennessee	"	D	0.48	Van Hook et al. (1974)
" "	"	twig	D	0.26	"
" "	"	branch	D	0.30	"
" "	"	bole	D	0.21	"
" "	"	root	D	0.30	"
" "	"	0_1 litter	D	0.26	"
" "	"	0_2 litter	D	0.60	"
" "	Missouri	stem & leaf	D	0.42	Shacklette (1972)
" "	"	needle	D	(<0.5-0.96)	Bolter et al. (1973)
" "	Missouri (near ore trucks)	stem & leaf	A	20.0	"
Limber pine *Pinus flexilis*	Colorado	stem	D	0.14	"
" "	"	leaf	D	0.1	"
Ponderose pina *Pinus ponderosa* var. *scopulorum*	"	stem	D	0.22	"
" " "	"	leaf	D	0.11	"
White pine *Pinus strobus*	United States	"	D	0.9	Hanna & Grant (1962)
Pine *Pinus sp.*	United States	"	W	0.05	Schroeder et al. (1967)

Garden pea *Pisum sativum*	United States		W	0.04	Schroeder et al. (1967)
" "	Kansas (smelter area)		D	0.7	Lagerwerff & Brower (1974)
" "	Washington, D. C.		D	0.42	"
Blue grass *Poa sp.*	Indiana		D	0.37	Yost et al. (1975)
" "			D	(0.25-0.49)	Lagerwerff & Specht (1970)
Solomon's seal *Polygonatum biflorum*	Indiana		D	0.5	Yost et al. (1975)
Aspen *Populus tremula*	Russia	bark	D	1.6	Malyuga (1941)
Quaking aspen *Populus tremuloides*	Colorado	stem	D	0.77	Shacklette (1972)
" "	"	leaf	D	0.45	"
" "	Indiana		D	7.35	Yost et al. (1975)
Poplar *Populus sp.*	S.W. Missouri (on old mine dump)	leaf	D	40.0	Cannon (1974)
" "	" " " "	twig	D	45.0	"
" "	" " " "	wood	D	22.0	"
" "	" " " "	bark	D	37.0	"
Potamogeton richardsoni	Nova Scotia	leaf & stem	D	(0.65-4.86)	Ray & White (1976)
" "	" "	root	D	(1.32-6.73)	"

Apricot *Prunus armeniaca*	United States	fruit (canned)	W	0.01	Schroeder et al. (1967)
" "	" "	fruit		0.011	US HEW (1975)
Peach *Prunus persica*	" "	"		0.003	"
Choke cherry *Prunus virginiana*	Indiana		D	0.39	Yost et al. (1975)
Douglas fir *Pseudotsuga menziesii*	Colorado	stem	D	0.2	Shacklette (1972)
" "	"	leaf	D	0.07	"
Pear *Pyrus communis*	Great Britain	fruit	W	(0.01-0.09) 0.03	Thomas et al. (1972)
" "	" "	skin	W	(0.01-0.04) 0.02	"
" "	" "	flesh	W	(0.01-0.09) 0.02	"
" "	United States			0.013	US HEW (1975)
White oak *Quercus alba*	Missouri	leaf	D	(<0.5-0.96)	Bolter et al. (1973)
" "	Tennessee	"	D	0.12	Van Hook et al. (1974)
" "	"	branch	D	0.03	"
" "	"	bole	D	0.05	"
" "	Missouri	stem	D	0.16	Shacklette (1972)
Pin oak *Quercus palustris*	Connecticut	leaf & twig	D	(1.5-3.0) 2.3±SE 0.2	Smith (1973)

Pin oak *Quercus palustris*	United States	leaf	D	2.4	Hanna & Grant (1962)
Willow oak *Quercus phellos*	Missouri	stem	D	0.28	Shacklette (1972)
Chestnut oak *Quercus prinus*	Tennessee	leaf	D	0.16	Van Hook et al. (1974)
" "	"	twig	D	0.29	"
" "	"	branch	D	0.11	"
" "	"	bole	D	0.02	"
" "	"	root	D	0.34	"
" "	"	O_1 litter	D	0.42	"
" "	"	O_2 litter	D	0.81	"
Oak *Quercus robur*	Great Britain	unwashed leaf	D	6.82± 1.33	Little (1973)
Red oak *Quercus rubra*	Tennessee	leaf	D	0.35	Van Hook et al. (1974)
" "	"	branch	D	0.08	"
" "	"	bole	D	0.11	"
Post oak *Quercus stellata*	Missouri	stem	D	0.11	Shacklette (1972)
" "	"	leaf	D	(<0.5-0.96)	Bolter et al. (1973)
Black oak *Quercus velutina*	Indiana	new growth	D	0.5	Yost et al. (1975)
" "	"	branch	D	0.7	"
" "	Tennessee	leaf	D	0.69	Van Hook et al. (1974)

Black oak Quercus velutina	Tennessee	branch	D 0.3	Van Hook et al. (1974)
" "	"	bole	D 0.14	"
Oak Quercus sp.	United States	leaf	W 0.09	Schroeder et al. (1967)
Radish Raphanus sativus			(200 m from highway, 40% of Cd was from air)	Lagerwerff (1971)
" "	Japan		W 0.017	Yamagata & Shigematsu (1970)
" "	Montana		W 0.6	Hindawi & Neely (1972)
" "	Japan (1.2 km from refinery)	leaf	D 15.0	Kobayashi (1972)
" "	" " " "	root	D 3.0	"
" "	Canada	leaf	D 2.5	Hutchinson et al. (1974)
" "	"	root	D 1.1	"
" "		top	D 1.57	Haghiri (1973)
" "		root	D 0.51	"
" "	Japan	"	W 0.017	Yamagata & Shigematsu (1970)
Rhubarb Rheum rhapsonticum	Kansas (smelter area)	stalk	D 2.6	Lagerwerff & Brower (1974)
" "	Washington, D.C.	"	D 0.57	"

Sumach Rhus aromatica	Indiana		D	0.5	Yost et al. (1975)
Winged sumach Rhus capallina	Missouri	stem	D	0.11	Shacklette (1972)
Smooth sumach Rhus glabra	Missouri	"	D	0.14	"
Poison ivy Rhus radicans	Indiana		D	0.52	Yost et al. (1975)
Wild gooseberry Ribes sp.	Colorado	"	D	0.08	Shacklette (1972)
" "	"	leaf	D	0.07	"
Water cress Rorripa nasturtium-aquaticum	Great Britain	leaf & stem	W	(0.01-0.04) 0.02	Thomas et al. (1972)
Wild rose Rosa carolina	Indiana		D	0.61	Yost et al. (1975)
Rudbeckia hirta	"		D	9.25	"
Sour dock Rumex acetosa	Germany	leaf	D	0.16	Ernst (1975)
Sugar cane Saccharum officinarum				0.0083	Mahaffey et al. (1975)
" "				0.1	US HEW (1975)
" "		cane pulp		0.04	Schroeder et al. (1967)
" "		cane sugar		0.06	"
Willow Salix alba	Great Britain	unwashed leaf	D	7.85±1.24	Little (1973)

Willow *Salix nigra*	Connecticut	catkin	D	25.0?	Cowgill (1970)
Willow *Salix sp.*	Indiana		D	9.4	Yost et al. (1975)
" "	Colorado	stem	D	1.5	Shacklette (1972)
" "	"	leaf	D	0.97	"
Aquatic fern *Salvinia natans*	(control)			2.1	Hutchinson & Czyrska (1972)
" "	(in 1.0 ppm Cd aquatic culture)			6400.0	"
Rye *Secale cereale*	Sweden		W	(0.01-0.021)	Kjellstrom et al. (1974)
Pink *Silene cucubalus*	Germany	leaf	D	0.02	Ernst (1975)
Smilacina stellata	Indiana		D	1.44	Yost et al. (1975)
Eggplant *Solanum melongena*	Japan (700 m from mine refinery)			(41.0-61.0)	Kobayashi et al. (1969)
" "	Japan	fruit	D	8.0	Kobayashi (1972)
" "		"	D	8.0	Shacklette (1972)
Potato *Solanum tuberosum*	United States	tuber	W	0.03	Schroeder et al. (1967)
" "	Germany	"		(0.18-0.2)	Kropf & Geldmacher (1968)

Potato *Solanum tuberosum*	Germany (control)	tuber	W	0.04±0.03	Anke et al. (1976)
" "	Germany (polluted)	"	W	0.31±0.39	"
" "	United States			(0.01-0.08)	Corneliussen (1972)
" "	" "			0.046	Mahaffey et al. (1975)
" "	" "	tuber		0.057	US HEW (1975)
" "	Japan	"		0.041	Yamagata & Shigematsu (1970)
" "	Czechoslovakia	"	W	0.092± SE 0.002	Lener & Bibr (1971)
" "	Romania	"	W	0.017	Rautu & Sporn (1970)
" "	Japan	"	W	0.038	Ishizaki et al. (1970)
" "	Japan (800 m from refinery)	"	D	2.0	Kobayashi (1972)
" "	Montana		W	(<0.05-0.2)	Hindawi & Neely (1972)
" "	Great Britain	"	W	(0.01-0.17) 0.08	Thomas et al. (1972)
" "	Canada	leaf	D	(0.86-1.5)	Hutchinson et al. (1974)
" "	"	tuber	D	(0.45-1.05)	"
" "	United States		D	(0.05-0.3)	Shacklette (1972)
" "	New York		D	0.36	Cannon (1970)
Goldenrod *Solidago sp.*	Indiana		D	1.0	Yost et al. (1975)

Saltgrass *Spartina alternifolia*	S.E. Atlantic (salt marshes)		D	(0.1-1.9) 0.5	Windom (1974)
" "	N.W. Atlantic	leaf	D	0.5	Windom & Smith (1972)
Sorghum *Sorghum vulgare*	Kansas	stem	D	4.7	Lagerwerff et al. (1973)
" "	"	leaf	D	5.4	"
" "	"	seed	D	1.6	"
Spinach *Spinacia oleracea*	United States	fresh leaf	W	0.45	Schroeder et al. (1967)
" "	Romania	"	W	0.064	Rautu & Sporn (1970)
" "	United States			0.057	US HEW (1975)
" "	" "	leaf	D	(0.6-1.2)	Shacklette (1972)
" "	Japan		W	0.095	Yamagata & Shigematsu (1970)
" "	"		W	0.128	Ishizaki et al. (1970)
Grass *Stipa spartea*	Indiana		D	0.24	Yost et al. (1975)
Snowberry *Symphoricarpus occidentalis*	Colorado	stem	D	0.09	Shacklette (1972)
" "	"	leaf	D	0.12	"
Buckbush *Symphoricarpus orbiculatus*	Missouri	stem	D	0.41	"

Yew Taxus sp.	Connecticut	leaf	D	(0.5-2.5) 1.2±SE 0.2	Smith (1973)
" "	"	twig	D	(0.5-4.1) 2.0±SE 0.4	"
Tetradymia sp.	Montana			(leaf collected Cd in airborne dust)	Munshower (1972)
Turtle grass Thalassia testudinum	Puerto Rico		D	(1.9-2.6) 2.2	Lowman et al. (1966)
" "	" "		W	(0.29-0.45) 0.34	"
Grass Themeda sp.	United States			0.028	Williams & David (1973)
Pennycress Thlaspi alpestre	Germany	leaf	D	4.83	Ernst (1975)
Thymus serpyllum	"	"	D	0.3	"
Spanish moss Tillandsia usneoides				(excellent bio-indicator for Cd from smelter, roadside, urban, or industry)	Shacklette & Connor (1973)
" "	United States		A	(0.8-27.0) geom. mean 7.9 geom. dev. ±1.65	"
" "	Florida, Mississippi, Louisiana		A	>20.0	"
Wandering jew Tradescantia phiensis	Indiana		D	0.93	Yost et al. (1975)
Red clover Trifolium pratense	Germany (control)		W	0.05±0.05	Anke et al. (1976)

Red clover *Trifolium pratense*	Germany (polluted)		W	0.35±0.22	Anke et al. (1976)
Wheat *Triticum aestivum*	United States	bread (whole wheat)	W	0.15	Schroeder et al. (1967)
" "	" "	bread (white)	W	0.22	"
" "	Japan (0.4-1.2 km from mine refinery)			6.8	Kobayashi et al. (1970)
" "	Germany (control)	grain	W	0.02±0.06	Anke et al. (1976)
" "	Germany (polluted)		W	0.47±0.23	"
" "	Montana		W	(0.1-1.5)	Hindawi & Neely (1972)
" "	Sweden (control)	grain	D	0.067±SE 0.007	Linnman et al. (1973)
" "	"	flour	D	0.033	"
" "	"	bran	D	0.148	"
" "	Sweden (6.5 tons/ha sewage sludge)	grain	D	119.0±SE 0.005	"
" "	(58 tons/ha ")	"	D	257.0±SE 0.009	"
" "	Sweden, 1918	"	W	0.024	Kjellstrom et al. (1975)
" "	" 1920	"	W	0.013	"
" "	" 1925	"	W	0.022	"
" "	" 1930	"	W	0.037	"
" "	" 1935	"	W	0.015	"

Wheat *Triticum aestivum*	Sweden, 1940	grain	W	0.014	Kjellstrom et al. (1975)
" "	" 1949	"	W	0.019	"
" "	" 1955	"	W	0.043	"
" "	" 1960	"	W	0.050	"
" "	" 1965	"	W	0.038	"
" "	Japan	"	W	0.025	Ishizaki et al. (1970)
" "	Sweden (4 km from Cu plant)	"	W	(0.081-0.181)	Kjellstrom et al. (1975)
" "	Sweden (control)	"	W	(0.029-0.053)	"
" "	United States	hard	D	0.1±SD 0.02	Zook et al. (1970)
" "	" "	soft	D	0.07±SD 0.02	"
" "	" "	durum	D	0.13±SD 0.01	"
Eastern hemlock *Tsuga canadensis*	Connecticut	leaf	D	(0.5-1.0)0.9 ±SE 0.1	Smith (1973)
" "	"	twig	D	(0.5-1.8)1.2 ±SE 0.2	"
" "		needle		0.083± SE 0.052	Huckabee & Blaylock (1973)
" "		twig		0.326±SD 0.181	"
" "	United States	leaf	D	0.6	Hanna & Grant (1962)
Cattail *Typha angustifolium*	Indiana		D	1.71	Yost et al. (1975)

Elm Ulmus glabra	Great Britain (near smelter)	leaf	D	50.0	Little & Martin (1972)
" "	Great Britain (10-15 km from smelter)	"	D	0.25	"
" "	Great Britain (in smelter area)	unwashed leaf	D	(30.0-55.0)	Little (1973)
" "	Great Britain (% removed washed in deionized water 62.0%)				"
" "	Great Britain (% removed washed in detergent water 78.0%)				"
" "	Great Britain (% removed washed in 5% HNO_3 98.9%)				"
" "	Great Britain (% removed washed in 1% HNO_3 98.7%)				"
Bilberry Vaccinium myrtillus	Sweden	leaf & stem	D	4.4	Tyler (1972)
Dryland blueberry Vaccinium pallidum	Missouri	leaf	D	(<0.5-0.96)	Bolter et al. (1973)
Cowberry Vaccinium vitis idaea	Sweden	leaf & stem	D	3.2	Tyler (1972)
Violet Viola calaminaria	Germany	leaf	D	0.02	Ernst (1975)
Grape Vitis riparis	Indiana		D	0.42	Yost et al. (1975)

Grape *Vitis sp.*	Romania		W	0.007	Rautu & Sporn (1970)
Corn *Zea mays*	United States	hybrid	W	0.12	Schroeder et al. (1967)
" "	Ohio (in sludge-treated soil)	grain		1.0	Kirkham (1975)
" "	" " " "	leaf		13.9	"
" "	(non-polluted)		D	0.1	Shacklette (1972)
" "	(polluted area)		D	2.0	"
" "	Romania		W	0.0	Rautu & Sporn (1970)
" "	United States	leaf		1.0	Prince (1957)
" "	" "	grain	D	0.96	"
" "	" "	husk		0.67	"
" "	Ontario	leaf	D	0.7	Hutchinson et al. (1974)
" "	"	root	D	0.4	"
" "	"	flower	D	1.2	"
" "	Japan	grain	D	0.5	Kobayashi (1972)
" "	United States		W	0.033	Fulkerson & Goeller (1973)
" "	United States (grown in sludge-treated soil)	fruit		1.03	Kirkham (1974)
" "	" " " "	leaf		11.6	"

Zizia aurea	Indiana	D 0.6	Yost et al. (1975)
Eel grass *Zostera marina*	Black Sea	D 0.23	Vinogradov (1953)
" "	Spain & Portugal	D (2.0-5.3)	Stenner & Nickless (1975)
" "	Norway	D 2.8	"
"Grass"	Canada (N.E. from Pb smelter (m)):		De Koning (1974)
"	" " " 80	D 4.0	"
"	" " " 170	D 3.0	"
"	" (N from Pb smelter (m)):		
"	" " " 80	D 3.8	"
"	" " " 170	D 1.0	"
"	" (Ave. all directions, 80)	D 2.4	"
"	" (Ave. all directions, 170)	D 1.8	"

CADMIUM IN MOSSES, LICHENS, AND FUNGI(1)

MOSSES

Species	Locality	Tissue	Analysis(2) PPM	Authority
Anomodon rostratus	Missouri		A (5.2-5.6) (ave.)	Shacklette (1972)
Atrichum angustifolium	"		A (5.2-5.6) (ave.)	"
Brachythecium rivulare	Tennessee (uptake of ^{109}Cd in 12 days)		(1.0-2.0)	Huckabee et al. cited in Fulkerson & Goeller (1973)
Cirriphyllum illecebrum	Missouri		A (5.2-5.6) (ave.)	Shacklette (1972)
Dicranum scoparium	"		A (5.2-5.6) (ave.)	"
Dicranum sp.	Tennessee		D 0.421±SD 0.143	Huckabee & Blaylock (1973)
Eurhynchium hians	Tennessee (uptake of ^{109}Cd in 12 days)		(1.0-2.0)	Huckabee et al. cited in Fulkerson & Goeller (1973)
Eurhynchium praelongum	Great Britain (near smelter)		D 148.0	Little & Martin (1972)

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Eurhynchium sp.	Great Britain Bristol dist. from Zn smelter (mi):			Burkitt et al. (1972)
" "	" " " " 2.4	D	86.0	"
" "	" " " " 2.9	D	148.0	"
" "	" " " " 6.0	D	49.0	"
Fontinalis antipiretica	Sweden	D	(1.6-17.0)	Ljundggren et al. (1971)
Hedwigia ciliata	Missouri	A	(5.2-5.6) (ave.)	Shacklette (1972)
Hylocomium splendens	(windward of urban area)		(3.0-4.0)	Jaakkola et al. (1971)
" "	(to 100 km away from urban area)		1.0	"
" "	Quebec (Cu smelter area)	D	(<0.5-12.0)	LeBlanc et al. (1974)
" "	Quebec (control)	D	1.1	"
" "	S. Scandinavia	D	(0.8-1.5)	Ruhling & Tyler (1973)
" "	N. Norway	D	<0.1	"
Hylocomium sp.	N. Finland (Lapland)	D	0.18	"
" "	S. Finland	D	(0.49-0.70)	"
Hypnum compressiforme	Sweden (polluted forest)	D	30.0	Tyler (1972)
" "	Sweden (normal Cd)	D	(0.7-1.2)	Ruhling (1971)
" "	Sweden (polluted areas)	D	(7.5-81.7)	" (1969)

Hypnum compressiforme	Wales dist. from smelter industrial area (km):			Goodman & Roberts (1971)
" "	" " " 1.5	D	dead	"
" "	" " " 3.0	D	dead	"
" "	" " " 8.0	D	9.5	"
" "	" " " 8.0	D	4.5	"
" "	" " " 6.5	D	1.0	"
" "	" " " 25.0	D	(1.0-3.0)	"
" "	" " " (upwind)18.0	D	1.8	"
" "	S. Sweden (control)	D	0.76	Ruhling & Tyler (1970)
Hypnum compressiforme var. filiforma	Time after closure of Zn/Pb smelter (mo):		(ng Cd/cm^2/day by moss bags)	Roberts & Goodman (1973)
" " "	" " " 0	(D"	35.0±SE 9.0)	"
" " "	" " " 1	(D"	5.0±SE 1.0)	"
" " "	" " " 8	(D"	1.3±SE 1.0)	"
" " "	Endemic moss at time of closure	D	(1.39-7.6)	"
" " "	low contamination site (control)	D	(0.6-2.5)1.6 ±SE 0.14	"
Leucobryum glaucum	Missouri	A	(5.2-5.6) ave.	Shacklette (1972)
Mnium affine	"	A	(5.2-5.6) ave.	"
Pleurozium schreberi	Quebec Cu smelter area	D	(<0.5-4.4)	LeBlanc et al. (1974)
" "	Quebec (control)	D	<0.5	"

Polytrichum commune	Missouri	A	(5.2-5.6) ave.	Shacklette (1972)
Polytrichum sp.	Tennessee	D	0.383±SD 0.114	Huckabee & Blaylock (1973)
Sphagnum angustifolium	S. Finland	D	0.18	Pakarinen & Tolanem (1976)
" "	Great Slave Lake, N.W.T.	D	0.19	"
Sphagnum balticum	S. Finland	D	0.63	"
Sphagnum fuscum	" "	D	0.56	"
" "	Finland	D	(0.17-0.47) 0.3	"
" "	Great Slave Lake, N.W.T.	D	0.2	"
" "	Edmonton, Alberta	D	0.17	"
Sphagnum magellanicum	S. Finland	D	0.45	"
" "	S. Sweden	D	1.0	Ruhling & Tyler (1970)
Sphagnum squarrosum (and related species)	Great Britain (exposed in moss bags)			Little & Martin (1974)
" "	(collected/day)		(1.93-2.84)2.56 µg/g/day	"
" "	(mapped contour lines of Cd contamination around Zn & Pb smelter area using moss bags)			"
" "	(mapped contours from 0.225-0.3 µg/g/day)			"
Sphagnum sp.	Antarctica K. Haakan	D	0.12-0.84	Goodman et al. (1973)

Sharpiella striatella	Tennessee (uptake of ^{109}Cd in 12 days)		(1.0-2.0)	Huckabee et al. cited in Fulkerson & Goeller(1973)

CADMIUM IN MOSSES, LICHENS, AND FUNGI

LICHENS

Cladonia alpestris	Finland, Lapland (unpolluted area)	D	(0.1-0.2)	Jaakkola et al. (1973)
" "	Finland (6 mos. after close of Zn smelter)	D	1.0	"
" "	Finland (unpolluted areas)	D	(0.3-0.4)	"
" "	Finland, Lapland (unpolluted areas)	D	(0.05-0.43) 0.13	" (1971)
Cladonia cristatella	Pennsylvania	D	22.0	Nash (1975)
Cladonia rangiferina	Missouri (growing on dolomite)		0.19	Shacklette (1972)
Cladonia rangiformis	Germany	D	0.41	Ernst (1975)
Cladonia squamosa	Pennsylvania	D	10.0	Nash (1975)
Cladonia uncialis	"	D	(3.0-32.0)	"
Cladonia sp.	Antarctica K Haakan	D	0.24	Goodman et al. (1973)
Lasallia papulosa	Pennsylvania (Zn smelter area)	D	32.0	Nash (1975)
" "	Pennsylvania (control)	D	1.0	"
Micarea trisepta	Pennsylvania (near Zn smelter)	D	(33.0-320.0)	"

Parmelia baltimorensis	Washington, D. C. (1938)	5.0	Hale (1975)
" "	" (1958)	6.0	"
" "	" (1970)	9.0	"
" "	" (1971)	6.0	"
" "	Connecticut (1971)	5.0	"
Parmelia caperata	Japan (urban area)	D 1.14±SD 0.55	Saeki et al. (1977)
Parmelia clavulifera	" "	D 0.59±SD 0.11	"
Parmelia conspersa	" "	D 0.84±SD 0.33	"
" "	Pennsylvania	D 32.0	Nash (1975)
Parmelia physodes	Sweden (polluted forest)	D 12.0	Tyler (1972)
Parmelia plittii	Pennsylvania	D 30.0	Nash (1975)
Parmelia taractica	"	D 4.0	"
Parmelia tinctorum	Japan (urban area)	D 0.70±SD 0.19	Saeki et al. (1977)
Parmelia sp.	Great Britain (near smelter)	D 90.0 (max.)	Little & Martin (1972)
Parmelia sp.	Great Britain Bristol dist. from Zn smelter (mi):		Burkitt et al. (1972)
" "	" " " 1-3	D (72.0-90.0)	"
" "	" " " 6.0	D 20.0	"
Stereocaulon spp.	Finland	Cd strikingly concentrated	in Ferry et al. (1973)
Umbilicaria mammulata	Pennsylvania	D 5.0	Nash (1975)
Umbilicaria spp.	Finland	Cd strikingly concentrated	in Ferry et al. (1973)

Umbilicaria pustulata	Finland (on siliceous rocks)			(30.0-3000.0)	in Ferry et al. (1973)
Verrucaria nigrescens	Pennsylvania (near Zn smelter)			334.0	Nash (1972)
"Lichens"	Pennsylvania			Cd more toxic & important than SO_2	in Ferry et al. (1973)
15 species lichens	Finland		A	(10.0-300.0)	Lounamaa (1956)
" " "	"		A	(30.0-600.0)	"

CADMIUM IN MOSSES, LICHENS, AND FUNGI

FUNGI

Gem-studded puffball *Lycoperdon perlatum*	Connecticut (near highway)	sporophores unwashed	D	2.62	McCreight & Schroeder (1977)
" "	" " "	sporophores washed	D	3.12	"
" "	" " "	sporophores (max.)	D	5.34	"
" "	" " "	gleba	D	1.71	"
" "	" " "	base	D	0.0	"
"Mushroom"	Great Britain		W	(0.01-0.02) 0.02	Thomas et al. (1972)

CADMIUM IN ALGAE(1)

Species	Locality	Tissue	Analysis(2) PPM	Authority
Acanthopeltis japonica	Japan		D 0.1	Ishibashi et al. (1964)
Red alga *Ahnfeltia plicata*	Great Britain		D 0.0	Leatherland & Burton (1974)
Allaria esculenta	Russia		D 1.0	Malyuga (1941)
Anabaena sp.	Indiana		D 0.22	Yost et al. (1974)
Brown alga, knotted wrack *Ascophyllum nodosum*	Great Britain		D 0.349	Mullin & Riley (1956)
" "	Norway (polluted)		D (1.5-11.5)	Stenner & Nickless (1974a)
" "	Norway (non-polluted)		D (1.0-1.5)	"
" "	Norway		D (<0.7-1.0)	Haug et al. (1974)
" "	"		D (<0.1-2.0)	Lande (1977)
" "	Russia		D (0.29-0.34)	Malyuga (1941)

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Bossea sp.	S. California	W	(2.39-2.72)	Vattuone et al. (1976)
Red alga *Bryothamnium triquetrum*	Puerto Rico	A	6.0 (ave.)	Lowman et al. (1966)
Chara *Chara fragilis*	Indiana	D	(<0.2-0.2)	Yost et al. (1974)
Irish moss *Chondrus crispus*	Spain & Portugal	D	4.9	Stenner & Nickless (1975)
Brown alga *Chorda filum*	Norway (non-polluted)	D	(ND-3.5)	" (1974a)
" "	Norway (polluted)	D	(0.9-20.0)	"
" "	Spain & Portugal	D	0.7	" (1975)
Green alga *Cladophora glomerata*	Sweden	D	(2.0-6.0)	Hägerhäll (1972)
Green alga *Cladophora sp.*	Idaho (contaminated)		36.0	Funk et al. (1973)
Green alga *Codium fragile*	Korea	D	0.52	Kim (1972)
Green alga *Codium sp.*	Great Britain	D	0.865	Mullin & Riley (1956)
Green alga *Codium taylori*	Puerto Rico	A	5.0 (ave.)	Lowman et al. (1966)
Red alga *Corallina officinalis*	Norway	D	3.0	Stenner & Nickless (1974a)
" "	Great Britain	D	0.858	Mullin & Riley (1956)

Red alga Corallina officinalis	Spain & Portugal	D	(4.4-6.2)	Stenner & Nickless (1975)
Cymodocea sp.	Puerto Rico	D	(2.0-3.1) 2.3	Lowman et al. (1966)
" "	" "	W	(0.15-0.49) 0.23	"
Cystophyllum sisymbrioides	Korea	D	<0.02	Kim (1972)
Delesseria sanguinea	Spain & Portugal	D	4.1	Stenner & Nickless (1975)
Desmarestia viridis	Japan	D	0.1	Ishibashi et al. (1964)
Ecklonia stolonifera	Korea	D	(0.03-0.82)	Kim (1972)
Egregia laevigata	S. California	W	(0.94-1.14)	Vattuone et al. (1976)
Eisenia bicyclis	Japan	D	0.3	Ishibashi et al. (1964)
Green alga Enteromorpha linza	Korea	D	(0.02-1.2)	Kim (1972)
Green alga Enteromorpha intestinalis	Sweden	D	(1.0-10.0)	Hägerhäll (1972)
Green alga Enteromorpha prolifera	Korea	D	(0.14-0.72)	Kim (1972)
Green alga Enteromorpha sp.	Norway (non-polluted)	D	(0.7-3.2)	Stenner & Nickless (1974a)
" "	Norway (polluted)	D	(2.7-13.0)	"
Bladder wrack Fucus ceranoides	Norway	D	(3.2-8.2)	"

Wrack *Fucus distichus*	W. Greenland	W	(0.57-8.0)	Bollingberg (1975)
Wrack *Fucus inflatus*	Russia	D	0.16	Malyuga (1941)
Wrack *Fucus serratus*	Norway (non-polluted)	D	(2.3-3.2)	Stenner & Nickless (1974a)
" "	Norway (polluted)	D	(3.1-13.0)	"
" "	Great Britain	D	0.792	Mullin & Riley (1956)
" "	Great Britain Portland	D	0.3	Leatherland & Burton (1974)
" "	Great Britain Severn Estuary	D	53.0	"
" "	Russia	D	(0.29-0.34)	Malyuga (1941)
Wrack *Fucus spiralis*	Norway	D	5.9	Stenner & Nickless (1974a)
Bladder wrack *Fucus vesiculosus*	Great Britain	D	(2.03-2.08)	Mullin & Riley (1956)
" "	Great Britain Bristol Channel	D	(2.0-75.0)	Nickless et al. (1972)
" "	South Wales, Aberavon Beach	D	(0.7-11.0) 9.3	Nickless (1973)
" "	Great Britain Severn Estuary	D	(15.0-220.0)	Butterworth et al. (1972)
" "	" "	D	1.7±0.24	Preston et al. (1972)

Bladder wrack Fucus vesiculosus	Great Britain Severn Estuary (1961)	D	(0.05-21.0)	Preston et al. (1972)
" "	" " " (1970)	D	(0.4-20.8)	"
" "	W. Greenland	W	(0.57-8.0)	Bollingberg (1975)
" "	Norway	D	1.0	Lande (1977)
" "	Norway (polluted)	D	(4.7-12.5)	Stenner & Nickless (1974a)
" "	Norway (non-polluted)	D	(1.8-2.8)	"
" "	Great Britain Irish Sea	D	(0.10-4.30)	Fuge & James (1974)
" "	Great Britain Bristol Channel (polluted)	D	(6.07-25.60) 13.81±SD 7.31	"
" "	" " " "	D	(3.82-19.5)	Morris & Bale (1975)
" "	Great Britain Cornish Coast	D	(0.9-8.5)	Bradfield et al. (1976)
Red alga Galaxaura marginata	Puerto Rico	A	6.0	Lowman et al. (1966)
Red alga Gelidium sp.	Japan	D	0.2	Ishibashi et al. (1964)
Red alga Gigartina stellata	Norway	D	(0.6-1.3)	Stenner & Nickless (1974a)
Gliopeltis furcata	Korea	D	(0.65-1.26)	Kim (1972)
Red alga Gracilaria caudata	Puerto Rico	A	6.0 (ave.)	Lowman et al. (1966)

Red alga Gracilaria cornea	Puerto Rico	A	6.0 (ave.)	Lowman et al. (1966)
Brown alga Halidrys siliquosa	Great Britain	D	0.43	Leatherland & Burton (1974)
Halimeda gracilis	Indian Ocean	D	0.312	Mullin & Riley (1956)
Halimeda opuntia	Puerto Rico	A	5.0 (ave.)	Lowman et al. (1966)
Ishige sinicola	Korea	D	0.60	Kim (1972)
Hizikia sp.	"	D	(0.41-1.18)0.97	"
Laminaria digitata	Great Britain	D	0.134	Mullin & Riley (1956)
" "	" "	D	0.15	Leatherland & Burton (1974)
" "	Norway	D	(2.3-4.3)	Stenner & Nickless (1974a)
Brown alga Laminaria japonica	Korea	D	(0.14-0.38)	Kim (1972)
Brown alga Laminaria reliosa	"	D	(0.13-1.18)	"
Brown alga Laminaria saccharina	Great Britain	D	0.35	Leatherland & Burton (1974)
" "	Russia	D	0.14	Malyuga (1941)
Brown alga Laminaria sp.	S. California	W	(0.44-0.81)	Vattuone et al. (1976)

Red alga *Laurencia obtusa*	Puerto Rico		A	6.0 (ave.)	Lowman et al. (1966)
Red alga *Lithophyllum sp.*			D	0.358	Mullin & Riley (1956)
Red alga *Lithothamnion sp.*	Great Britain		D	0.844	"
Green alga *Lyngbia mayuscula*	Puerto Rico		A	5.0 (ave.)	Lowman et al. (1966)
Lyngbya sp.	Indiana		D	0.35	Yost et al. (1974)
Brown alga *Macrocystis pyrifera*	California		A	(2.9-3.8) 3.4±0.4	Boothe & Knauer (1972)
" "	"	(calc.)	D	(1.93-2.53)2.25	"
Brown alga *Macrocystis sp.*	S. California	blade	W	0.85±SD 0.21	Vattuone et al. (1976)
Green alga *Nostoc muscorum*			accumulated ^{115}Cd		Makhonina & Gileva (1968)
Oscillatoria sp.	Nova Scotia		D	(0.85-0.98)	Ray & White (1976)
Brown alga, channel wrack *Pelvetia canaliculata*	Great Britain		D	(0.5-0.508)	Mullin & Riley (1956)
" "	Norway		D	(1.3-1.8)	Stenner & Nickless (1974a)
" "	"		D	<1.0	Lande (1977)
Phormidium sp.	Indiana		D	1.02±0.13	Yost et al. (1974)
Phyllaria dermatoidea	Russia		D	0.1	Malyuga (1941)

Laverweed Porphyra pseudolinearis	Korea	D	(0.08-0.10)	Kim (1972)
Laverweed Porphyra tenera	Japan	D	(0.085-4.046)	Ishio et al. (1973)
" "	Korea	D	(0.04-0.67)	Kim (1972)
Laverweed Porphyra umbilicalis	Great Britain Irish Sea	D	(0.05-0.97)	Preston et al. (1972)
Laverweed Porphyra yezoensis	Korea	D	0.27	Kim (1972)
Sargassum weed Sargassum fulvellum	"	D	(0.11-0.31) 0.18	Kim & Won (1974)
" "	"	D	(0.57-1.48)	Kim (1972)
Sargassum weed Sargassum horneri	"	D	0.3	"
Sargassum weed Sargassum sp.	Carribean Sea	D	(1.3-5.2) 3.1	Forster et al. (1972)
" "	Texas	D	(1.25-2.38) 1.82	Horowitz & Presley (1977)
Green alga Spirogyra sp.	Indiana	D	2.33±0.41	Yost et al. (1974)
Brown alga Turbinaria turbinata	Puerto Rico	A	6.0	Lowman et al. (1966)
Green alga Udotea flabellum	" "	D	(0.75-1.7) 0.69	"
" "	" "	W	(0.18-0.79) 0.45	"
Green alga Ulva lactuca	Norway	D	(0.9-1.5)	Stenner & Nickless (1974a)

Green alga Ulva lactuca	Spain & Portugal		D	(0.5-2.0)	Stenner & Nickless (1975)
" "	Puerto Rico		A	5.0 (ave.)	Lowman et al. (1966)
Green alga Ulva sp.	Japan		D	0.2	Ishibashi et al. (1964)
Undaria pinnatifida	Korea	natural	D	(0.03-0.60)	Kim (1972)
" "	"	cultured	D	0.63	"
" "	"	sporophyll	D	(0.02-0.25)	"
" "	"	blade	D	(0.20-0.56)	"
" "	"	"	D	(0.22-3.2) 0.44	Kim & Won (1974)
" "	"	sporophyll	D	(0.14-0.32) 0.23	"
Green alga Valonia ventricosa	Puerto Rico		A	5.0 (ave.)	Lowman et al. (1966)
Zygnema sp.	Indiana		D	2.33±0.41	Yost et al. (1974)

CHROMIUM IN MAMMALS (1)

Species	Locality	Tissue	Analysis PPM (2)	Authority
Pronghorn antelope *Antilocapra americana*	Idaho	hair	(1.9-640.0)	Huckabee et al. (1972)
" "	Wyoming	"	(0.3-130.0)	"
Cow *Bos bovis*	United States	bone marrow	W 0.03	Schroeder et al. (1962)
" "	"	muscle	W 0.09	"
" "	"	whole milk	W 0.01	"
" "	"	milk, skim dried	D 0.07	"
" "	"	calf liver	D 1.67	Toepfer et al. (1973)
" "	"	muscle	D 0.37	"
" "	"	milk, skim	D 0.13	"
" "	"	butter	D 0.15	"
" "	Texas	liver	D 0.4±SD 0.0	Horowitz & Presley (1977)

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Coyote *Canis latrans*	Wyoming	hair		(0.7-12.0)	Huckabee et al. (1972)
Guinea pig *Cavia porcellus*	United States	liver	D	(1.1-1.9)	Furr et al. (1976)
" "	"	kidney	D	(1.7-3.4)	"
" "	"	muscle	D	(1.8-3.4)	"
" "	"	adrenal	D	(5.6-9.5)	"
" "	"	spleen	D	(3.0-6.0)	"
Elk *Cervus canadensis*	Idaho	hair		(1.9-570.0)	Huckabee et al. (1972)
Oppossum *Didelphis virginiana*	Tennessee		D	0.6	NRCC (1976)
Porcupine *Erethizon dorsatum*	Wyoming	hair		0.9	Huckabee et al. (1972)
" "	"	quill		0.8	"
Chipmunk *Eutamias sp.*	"	hair		29.1	"
Vole *Microtus longicaudus*	Idaho	"		1.7	"
Mountain vole *Microtus montanus*	Wyoming	"		(4.7-180.0)	"
Meadow vole *Microtus pennsylvanicus*	"	"		(5.6-8.2)	"
Richardson's vole *Microtus richardsoni*	"	"		10.0	"
Mouse *Mus musculus*	with 0.1 ppm Cr in food & water	kidney	W	0.36	Schroeder et al. (1964)
" "	"	liver	W	0.12	"
" "	"	heart	W	0.67	"

Mouse *Mus musculus*	with 0.1 ppm Cr in food & water	lung	W	0.28	Schroeder et al. (1964)
" "	"	spleen	W	0.41	"
" "	"		W	0.36 ave. mean	"
" "	With 5.1 ppm Cr in food & water	kidney	W	0.86	"
" "	"	liver	W	0.51	"
" "	"	heart	W	1.7	"
" "	"	lung	W	0.95	"
" "	"	spleen	W	1.83	"
" "	"		W	1.23 ave mean	"
Mule deer *Odocoileus hemionus*	Idaho	hair		(13.0-630.0)	Huckabee et al. (1972)
Mountain goat *Oreamnus americanus*	"	"		(4.0-5.5)	"
Sheep *Ovis aries*	United States	lamb muscle	W	0.12	Schroeder et al. (1962)
Bighorn sheep *Ovis canadensis*	Wyoming	hair		0.0	Huckabee et al. (1972)
Common harbor seal *Phoca vitulina*	Great Britain	blood	W	0.03±SD 0.01	Hamilton (1976)
" "	"	spleen	W	0.004±SD 0.001	"
" "	"	heart	W	0.007	"
" "	"	muscle	W	0.01±SD 0.003	"
" "	"	kidney	W	0.01±SD 0.005	"
" "	"	liver	W	0.006±SD 0.004	"

Rat _Rattus_ _rattus_	New England (laboratory)	liver	D	(0.49-0.50)	Schroeder & Nason (1976)
" "	"	lung	D	(1.84-2.14)	"
" "	"	heart	D	(2.30-3.82)	"
" "	"	kidney	D	(1.79-2.47)	"
" "	"	spleen	D	(3.01-4.03)	"
Squirrel _Sciurus_ _sp._	Tennessee		D	0.8	NRCC (1976)
Cotton rat _Sigmodon_ _hispidus_	"	pelt, control	W	0.092±0.007	Taylor et al. (1975)
" "	Tennessee exposed to drift from cooling tower	pelt	W	1.056±0.133	"
" "	Tennessee	hair, control	W	0.395±0.021	"
" "	" exposed to drift	hair	W	4.397±0.555	"
" "	" 100-130 m from source	pelt	W	(0.93-1.2)	"
" "	" "	hair	W	(3.9-4.8)	"
" "				There was a 10 fold increase in Cr in both pelt and hair when rats ate vegetation with high levels of Cr	"
" "	Tennessee	heart	W	(0.105-0.124)	"
" "	"	liver	W	(0.046-0.160)	"
" "	"	kidney	W	(0.087-0.124)	"
" "	"	spleen	W	(0.493-0.713)	"
" "	"	lung	W	(0.289-0.292)	"

Cotton rat Sigmodon hispidus	Tennessee	bone	W	(0.160-0.460)	Taylor et al. (1975)
" "	"	muscle	W	(0.234-0.288)	"
" "	"	intestine	W	(1.006-1.046)	"
" "	"	pelt	W	(0.092-1.056)	"
" "	"	hair	W	(0.395-4.397)	"
Shrew Sorex vagrans	Wyoming	hair		15.0	Huckabee et al. (1972)
Pig Sus scrofa		muscle	W	0.1	Schroeder et al. (1972)
Red fox Vulpes fulva	Tenessee		D	0.8	NRCC 91976)
Western jumping mouse Zapus princeps	Wyoming	hair		(23.0-45.0)	Huckabee et al. (1972)

CHROMIUM IN BIRDS (1)

Species	Locality	Tissue	Analysis (2) PPM	Authority
Mallard Anas platyrhynchos	Canada	feather	D 0.05	Kelsall (1970)
Black duck Anas rubripes	"	"	D 0.05	"
White-fronted goose Anser albifrons	"	"	D 0.05	"
Lesser scaup duck Aythya affinis	"	"	D 0.05	"
Barrow goldeneye Bucephala islandica		low levels of Cr^{51} only in gut, blood, lungs		Davis et al. (1958)
Crow Corvus brachyrhynchos	Tennessee		D 1.0	Andren et al. (1973)
Chicken Gallus domesticus	United States	breast muscle	W 0.26	Schroeder et al. (1962)
" "	"	gizzard	W 0.11	"
" "	"	skin	W 0.27	"
" "	"	egg	W 0.16	"

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Chicken *Gallus domesticus*		muscle	D	0.37	Toepfer et al. (1973)
" "		egg	D	0.7	"
Lesser black-backed gull *Larus fuscus fuscus*	Norway	muscle	D	1.0	Lande (1977)
" " "	"	liver	D	1.0	"
" " "	"	kidney	D	1.0	"
Sparrow *Passer domesticus*	Tennessee		D	1.0	Andren et al. (1973)
Brown pelican *Pelecanus occidentalis*	Florida	egg	W	(0.005-0.067) geom. mean 0.014	Blus et al. (1977)
" "	South Carolina	"	W	(0.001-0.15) geom. mean 0.011	"
" "	"	liver	W	(0.026-0.056)	"
" "	Georgia	"	W	0.020	"
" "	Florida		W	(0.049-0.110)	"
Eider *Somateria mollissima*	Norway	muscle	D	1.0	Lande (1977)
" "	"	liver	D	1.0	"
" "	"	kidney	D	1.0	"
" "	"	egg	D	1.0	"
Hawk	Tennessee		D	1.0	Andren et al. (1973)
Owl	"		D	0.2	"
Partridge	United States	gizzard	W	0.13	Schroeder et al. (1962)

CHROMIUM IN MARINE FISH (1)

Species	Locality	Tissue	Analysis (2) PPM	Authority
Atlantic wolffish *Anarchichas lupus*	Norway		D 1.0	Lande (1977)
Deepbody anchovy *Anchoa compressa*	California	muscle	D 0.8	Emerson et al. (1976)
Sablefish *Anoplopoma fimbria*	Oregon		W (0.0-43.0) pCi/g Cr^{51}	Seymour & Lewis (1964)
Blue hake *Antimora rostrata*	New Jersey	muscle	W <0.61	Greig et al. (1976)
" "	"	liver	W (<0.52-0.59)	"
Greater silver smelt *Argentina silus*	Norway		D 1.0	Lande (1977)
Silverfish *Argyrozona argyrozona*	S. Africa	muscle	W <0.1	Van As et al. (1975)
Atractoscion aequidens	"	"	W 0.0	"

(1)
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(2)
W, D or A indicates on a Wet, Dry or Ashed basis. A single number indicates a single determination or mean. (x-y) indicates range of values, followed by the mean. ± Standard deviation (SD), standard error (SE), median, and geometric mean are indicated as reported. pCi/g = picocuries per gram.

Bogue *Boops boops*	Mediterranean	muscle	D	0.22	Fukai & Broquet (1965)
" "	"	internal organs	D	0.5	"
Filamented rattail *Chalinura filifera*	Oregon		W	7.2 pCi/g Cr^{51}	Seymour & Lewis (1964)
Rabbitfish *Chimaera monstrosa*	Norway		D	1.0	Lande (1977)
Chrysoblephus gibbiceps	S. Africa	muscle	W	<0.1	Van As et al. (1975)
Herring *Clupea harengus*	"	"	D	1.0	"
Shiner perch *Cymatogaster aggregata*	California	"	D	2.0	Emerson et al. (1976)
Sand sea trout *Cynoscion arenarius*	Texas	"	D	(5.5-8.3)6.9	Horowitz & Presley (1977)
" "	"	skin	D	(3.5-3.8)3.7	"
" "	"	air bladder	D	(1.8-2.7)2.6	"
Porgy *Diplodus vulgaris*	Israel	muscle	D	1.0	Roth & Hornung (1977)
Northern anchovy *Engraulis mordax*	California	"	D	2.5	Emerson et al. (1976)
Anchovy *Engraulis ringens*	Pacific		A	(0.11-0.16)	Goldberg (1962)
Grouper *Epinephelus aeneus*	Israel	muscle	D	1.0	Roth & Hornung (1977)

Merou blanc *Epinephalus guaza*	Israel	muscle	D	2.4	Roth & Hornung (1977)
Priest shark *Etmopterus spinax*	Norway		D	1.0	Lande (1977)
Atlantic cod *Gadus morhua*	N.E. Atlantic	muscle	W	(0.0-0.16) 0.07±SD 0.05	Zook et al. (1976)
" "	Iceland	"	W	(0.0-0.20) 0.12±SD 0.06	"
" "	Norway		D	(1.0-2.0)	Lande (1977)
Black-mouthed dogfish *Galeus melastomus*	"		D	1.0	"
White croaker *Genyonemus lineatus*	California	muscle	D	0.3	Emerson et al. (1976)
Rex sole *Glyptocephalus zachirus*	Oregon		W	(0.0-7.7) pCi/g Cr^{51}	Seymour & Lewis (1964)
Halosauran *Halosauropsis macrochir*	New Jersey	muscle	W	(0.98-1.17)	Greig et al. (1976)
Pacific halibut *Hippoglossus stenolepis*	Gulf of Alaska	"	W	(0.05-0.47) 0.18±SD 0.11	Zook et al. (1976)
Longspine squirrelfish *Holocentrus rufus*	Puerto Rico		W	(10.0-11.0) 10.5	Lowman et al. (1966)
Lanternfish *Hygophum hygomi*	New Jersey	whole	W	<0.49	Greig et al. (1976)
Surf smelt *Hypomesus pretiosus*	Oregon		W	84.0 pCi/g Cr^{51}	Seymour & Lewis (1964)
Kabeljou *Johnius hololepidotus*	S. Africa	muscle	W	0.72±SD 0.97	Van As et al. (1975)

Yellowtail flounder *Limanda ferruginea*	Long Island	muscle	W	(<0.1-0.2)	Greig & Wenzloff (1977)
" "	" "	liver	W	(<0.1-0.2)	"
" "	N.E. Atlantic	muscle	W	(0.0-0.29) 0.09±0.09	Zook et al. (1976)
Lithognathus lithognathus	S. Africa	"	W	0.11	Van As et al. (1975)
Angler *Lophius piscatorius*	"	"	W	<0.1	"
Red snapper *Lutjanus campechanus*	Gulf of Mexico	"	W	(0.0-0.50) 0.12±SD 0.13	Zook et al. (1976)
Grenadier *Macrurus rupestris*	Norway		D	1.0	Lande (1977)
Blue marlin *Makaira nigricans*	Japan	muscle	W	(0.01-0.03) 0.06±0.02	Nishiyaki et al. (1974)
Haddock *Melanogrammus aeglefinus* (=Gadus aeglefinus)			W	0.02	Schroeder et al. (1962)
" "			D	0.34	Toepfer et al. (1973)
" "	N.W. Atlantic	muscle	W	(0.0-0.22) 0.12±SD 0.07	Zook et al. (1976)
" "	Norway		D	(1.0-2.0)	Lande (1977)
Whiting *Merlangius merlangus*	"		D	1.0	"
Silver hake, whiting *Merluccius bilinearis*	Maine	muscle	W	(0.0-0.26) 0.09±SD 0.09	Zook et al. (1976)
Hake, stockfish *Merluccius capensis*	S. Africa	"	W	0.26±SD 0.44	Van As et al. (1975)

European hake *Merluccius merluccius*	Israel	muscle	D	(2.2-2.7)	Roth & Hornung (1977)
Pacific hake *Merluccius productus*	Washington, Oregon	"	W	(0.0-0.23) 0.09±SD 0.07	Zook et al. (1976)
Atlantic croaker *Micropogon undulatus*	Texas	"	D	7.3	Horowitz & Presley (1977)
" "	"	skin	D	4.8	"
Dover sole *Microstomus pacificus*	California		W	(0.0-1.1)0.5	Fowler et al. (1975)
" "	"	muscle	D	<0.2	McDermott et al. (1976)
" "	"	gonad	D	(<0.2-0.9)	"
" "	"	liver	D	(<0.2-0.6)	"
" "	"	kidney	D	(0.2-0.5)	"
" "	"	heart	D	(<0.2-0.4)	"
Planehead filefish *Monocanthus hispidus* (=Stephanolepis hispidus)	New Jersey	whole	W	<0.52	Greig et al. (1976)
Striped bass *Morone saxatilis*	Long Island		W	0.613	Zawacki & Briggs (1976)
" "	" "		D	1.96	"
Mullet *Mugil richardsoni*	S. Africa	muscle	W	<0.1	Van As et al. (1975)
Goatfish *Mullus barbatus*	Israel	"	D	(2.4-4.9)	Roth & Hornung (1977)

Smooth dogfish _Mustelus canis_	Long Island	muscle	W	<0.3	Greig & Wenzloff (1977)
" "	" "	liver	W	<0.8	"
Nematonurus armatus	New Jersey	muscle	W	<0.68	Greig et al. (1976)
" "	"	liver	W	<0.86	"
Yellowfin tuna _Neothunnus macropterus_	Pacific	whole	A	(0.04-0.3)	Goldberg (1962)
" "	"	blood	A	0.05	"
" "	"	pyloric caeca	A	1.20	"
" "	"	eyeball	A	0.07	"
" "	"	white muscle	A	0.03	"
" "	"	dark muscle	A	0.07	"
" "	"	gill	A	0.05	"
" "	"	heart	A	0.35	"
" "	"	intestine	A	0.04	"
" "	"	integument	A	0.16	"
" "	"	spleen	A	0.11	"
" "	"	stomach	A	0.06	"
" "	"	in stomach (squid)	A	0.06	"
" "	Japan		W	(0.05-0.00) 0.09±0.01	Nishigaki et al. (1974)
Hottentot _Pachymetopon grande_	S. Africa	muscle	W	3.0	Van As et al. (1975)

Sea bream *Pagellus centrodontus*	Mediterranean	muscle	D	0.03	Fukai & Broquet (1965)
" "	"	internal organs	D	0.25	"
Calico bass *Paralabrax clathratus*	California	dorsal muscle	D	(1.3-1.7)	Stapleton (1968)
" "	"	ventral muscle	D	1.4	"
" "	"	gonad	D	(2.0-2.6)	"
" "	"	liver	D	(1.0-1.5)	"
" "	"	integument	D	(1.4-1.9)	"
" "	"	heart	D	(0.9-1.7)	"
" "	"	eyeball	D	(4.8-5.5)	"
Flounder *Paralichthys sp.*	United States	muscle	W	0.01	Schroeder et al. (1962)
" "	"	skin	W	0.18	"
White sea perch *Phanerodon furcatus*	California	muscle	D	0.6	Emerson et al. (1976)
Pollock *Pollachius virens*	N.W. Atlantic	"	W	(0.0-0.18) 0.08±SD 0.07	Zook et al. (1976)
Bluefish *Pomatomus saltatrix*	Long Island		W	0.498	Zawacki & Briggs (1976)
" "	"		D	1.22	"
Wenchman *Pristipomoides aquilonarus*	Texas	muscle	D	2.4	Horowitz & Presley (1977)
" "	"	skin	D	3.5	"
" "	"	viscera	D	4.5	"

Winter flounder *Pseudopleuronectes americanus*	Texas	muscle	D	(0.6-7.4)3.3	Horowitz & Presley (1977)
" "	"	skin	D	(2.9-7.4)4.4	"
" "	Long Island	muscle	W	(<0.5-0.5)	Greig & Wenzloff (1977)
Pilchard *Sardina pilchardus*	Mediterranean	muscle	D	0.14	Fukai & Broquet (1965)
" "	"	internal organs	D	0.3	"
Gilt sardine *Sardinella aurita*	Israel	muscle	D	(2.1-3.4)	Roth & Hornung (1977)
Lizardfish *Saurida undosquamis*	Israel	"	D	(0.6-2.2)	Roth & Hornung (1977)
Chub mackerel *Scomber japonicus*	S. Africa	muscle	W	0.65±SD 0.85	Van As et al. (1975)
Atlantic mackerel *Scomber scombrus*	Mediterranean	"	D	0.05	Fukai & Broquet (1965)
" "	"	internal organs	D	0.4	"
Windowpane flounder *Scophthalmus aquosus*	Long Island		W	0.6±SE 0.3	Greig et al. (1977b)
" "	New York Bight		W	<0.5	"
" "	Delaware		W	<0.5	"
" "	Maryland		W	<0.2	"

Windowpane flounder *Scophthalmus aquosus*	Long Island		W	0.386	Zawacki & Briggs (1976)
" "	"		D	1.54	"
Ocean perch, redfish *Sebastes marinus*	Maine	muscle	W	(0.0-0.23) 0.10±SD 0.08	Zook et al. (1976)
Rock fish *Sebastodes spp.*	Oregon		W	(0.0-15.0) pCi/g Cr^{51}	Seymour & Lewis (1964)
Queenfish *Seriphus politus*	California	muscle	D	0.7	Emerson et al. (1976)
Yellowtail *Seriola pappei*	S. Africa	"	W	1.0±SD 1.8	Van As et al. (1975)
Amberjack *Seriola sp.*	New Jersey	muscle	W	<0.52	Greig et al. (1976)
" "	"	liver	W	<1.26	"
Black-ear bass *Serranus atrobranchius*	Texas	muscle	D	7.2	Horowitz & Presley (1977)
" "	"	skin	D	4.9	"
Siganus rivulatus	Israel	muscle	D	1.4	Roth & Hornung (1977)
Sole *Solea solea*	"	"	D	1.1	"
Barracuda *Sphyraena sphyraena*	"	"	D	(1.7-2.0)	"
Spiny dogshark *Squalus acanthius*	Sweden	without viscera	D	0.2	Noddack & Noddack (1940)

Long-spined porgy Stenotomus chrysops	Texas	muscle	D	(0.9-3.2)2.0	Horowitz & Presley (1977)
" "	"	skin	D	(3.5-15.0)8.1	"
" "	"	viscera	D	3.8	"
Synaphobranchus kaupi	New Jersey	whole	W	<0.42	Greig et al. (1976)
Sole Synaptura marginata	S. Africa	muscle	W	1.3±SD 1.8	Van As et al. (1975)
Striped marlin Tetrapturus audax	Japan	"	W	(0.02-0.13) 0.08±0.04	Nishigaki et al. (1974)
Albacore Thunnus alalunga	Pacific	spleen	A	35.0	Goldberg (1962)
" "	"	heart	A	0.04	"
" "	"	gall-bladder	A	0.1	"
" "	"	liver	A	0.04	"
" "	"	pyloric caeca	A	0.04	"
" "	"	stomach	A	0.03	"
" "	"	dorsal muscle	A	0.06	"
" "	"	midline muscle	A	0.04	"
" "	Japan	muscle	W	(0.03-0.07) 0.04±0.01	Nishigaki et al. (1974)
Albacore tuna Thunnus albacares	Mexico to Panama	"	W	(0.0-0.14) 0.07±SD 0.05	Zook et al. (1976)

Big eye tuna Thunnus obesus	Mexico to Panama	muscle	W	(0.02-0.26) 0.07±0.05	Nishigaki et al. (1974)
Rough scad Trachurus lathami	Texas	"	D	(2.7-5.0) 3.9	Horowitz & Presley (1977)
" "	"	skin	D	(2.8-4.6)3.7	"
" "	"	viscera	D	3.8	"
Horse mackerel Trachurus trachurus	S. Africa	muscle	W	0.14	Van As et al. (1975)
Sea robin Triglia capensis	"	"	W	<0.1	"
Sea robin Triglia sp.	Texas	"	D	(0.9-3.9)2.5	Horowitz & Presley (1977)
" "	"	skin	D	(2.2-5.0)3.1	"
Dwarf goatfish Upeneus moluccensis	Israel	muscle	D	(2.0-4.1)	Roth & Hornung (1977)
Red hake Urophycis chuss	Long Island	"	W	<0.2	Greig & Wengloff (1977)
" "	"	liver	W	<0.2	"
White hake Urophycis tenuis	"	muscle	W	<0.2	"
" "	"	liver	W	<0.2	"
Swordfish Xiphias gladius	Japan	muscle	W	(0.03-0.28) 0.08±0.07	Nishigaki et al. (1974)
Kingklip Xiphiurus capensis	S. Africa	"	W	0.92±SD 1.54	Van As et al. (1975)

CHROMIUM IN FRESHWATER FISH (1)

Species	Locality	Tissue	Analysis (2) PPM	Authority
Whitefish *Alburnus sp.*	Danube River		D (0.21-0.98)0.5	Reywoldt et al. (1975)
Alewife *Alosa pseudoharengus*	Lake Michigan	whole	W 1.1±SE 0.5	Lucas et al. (1970)
" "	Wisconsin		W 0.0	Kleinert et al. (1974)
Rockbass *Ambloplites rupestris*	"		W 0.0	"
Bowfin *Amia calva*	"		W 0.09	"
Freshwater drum *Aplodinotus grunniens*	"		W (0.0-0.04)	"
Goldfish *Carassius auratus*	"		W 0.0	"
Quillback *Carpioides cyprinus*	"		W 0.0	"
" "	Illinois	muscle	W (0.02-0.60) 0.21	Mathis & Cummings (1973)

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Largescale sucker Catastomus macrocheilus	Columbia River	highest Cr^{51} is in blood, liver, kidney and spleen			Davis et al. (1958)
Sucker Catastomus sp.	Wisconsin		W	(0.0-0.2)	Kleinert et al. (1974)
Cisco, Lake herring Coregonus artedii	"		W	0.0	"
Lake whitefish Coregonus clupeaformis	Moose Lake		W	0.033	Uthe & Bligh (1971)
" "	Lake Ontario		W	0.017	"
Slimy sculpin Cottus cognatus	Great Lakes			(0.094-0.48)	Thomas (1972)
Carp Cyprinus carpio	Wisconsin		W	(0.0-0.27)	Kleinert et al. (1974)
" "	Illinois	muscle	W	(0.02-0.46) 0.16	Mathis & Cummings (1973)
" "	Danube River		D	(0.21-0.98) 0.5	Reywoldt et al. (1975)
Gizzard shad Dorosoma cepedianum	Illinois	muscle	W	(0.10-1.06) 0.45	Mathis & Cummings (1973)
Northern pike Esox lucius	Moose Lake & Lake St. Pierre		W	(<0.026-0.035)	Uthe & Bligh (1971)
" "	Lake Erie		W	<0.031	"
" "	Illinois	muscle	W	(0.02-0.22) 0.13	Mathis & Cummings (1973)
" "	Wisconsin		W	(0.0-0.09)	Kleinert et al. (1974)
Catfish Ictalurus spp.	"		W	0.03	"

Bigmouth buffalo *Ictiobius cyprinellus*	Illinois	muscle	W	(0.02-0.53) 0.13	Mathis & Cummings (1973)
Shortnose gar *Lepisosteus platostomus*	Illinois	"	W	(0.10-0.20) 0.14	"
Pumpkinseed *Lepomis gibbosus*	Wisconsin		W	0.08	Kleinert et al. (1974)
Blue gill *Lepomis macrochirus*	"		W	(0.0-0.07)	"
Burbot *Lota lota*	"		W	0.0	"
Smallmouth bass *Micropterus dolomieui*	"		W	(0.03-0.18)	"
" "	Illinois	muscle	W	(0.04-0.27) 0.16	Mathis & Cummings (1973)
Largemouth bass *Micropterus salmoides*	Wisconsin		W	(0.0-0.07)	Kleinert et al. (1974)
" "	Illinois	muscle	W	(0.04-0.24) 0.11	Mathis & Cummings (1973)
White bass *Morone chrysops* (=Roccus chrysops)	Illinois	muscle	W	(0.04-0.08) 0.06	"
" "	Wisconsin		W	(0.0-0.04)	Kleinert et al. (1974)
Red horse sucker *Moxostoma macrolepidotum*	Illinois	muscle	W	(0.07-0.15) 0.09	Mathis & Cummings (1973)
Redhorse *Moxostoma sp.*	Wisconsin		W	0.04	Kleinert et al. (1974)

Spottail shiner Notropis hudsonius	Lake Michigan	whole		W	0.9±SE 0.5	Lucas et al. (1970)
" "	Lake Erie	"		W	10.0?	"
American smelt Osmerus mordax	"	muscle		W	0.034	Uthe & Bligh (1971)
" "	Great Lakes				(0.063-0.35)	Thomas (1972)
Coho salmon Oncorhynchus kisutch	Wisconsin			W	0.0	Kleinert et al. (1974)
Yellow perch Perca flavescens	Lake Erie	muscle		W	<0.065	Uthe & Bligh (1971)
" "	Wisconsin			W	(0.0-0.1)	Kleinert et al. (1974)
Trout-perch Percopsis omiscomaycus	Lake Michigan	whole		W	1.6±SE 0.2	Lucas et al. (1970)
" "	Lake Superior	"		W	≤3.0?	"
Crappie Pomoxis sp.	Wisconsin			W	(0.0-0.1)	Kleinert et al. (1974)
Yellow bass Roccus mississippiensis	"			W	0.04	"
Rainbow trout Salmo gairdnerii	"			W	(0.0-0.09)	"
Brown trout Salmo trutta	"			W	(0.0-0.09)	"
Brook trout Salvelinus fontinalis	"			W	0.0	"
Lake trout Salvelinus naymaycush	"			W	0.08	"
" "	Lake Cayuga New York	age in years	1	W	0.0052	Tong et al. (1974)
" "	"	"	2	W	0.0023	"

Lake trout Salvelinus naymaycush	Lake Cayuga New York	age in years	3	W	0.0032	Tong et al. (1974)
" "	"	"	4	W	0.0041	"
" "	"	"	5	W	0.012	"
" "	"	"	6	W	0.0128	"
" "	"	"	7	W	0.011	"
" "	"	"	8	W	0.0052	"
" "	"	"	9	W	0.010	"
" "	"	"	10	W	0.011	"
" "	"	"	11	W	0.032	"
" "	"	"	12	W	0.090	"
Walleye Stizostedion vitreum	Wisconsin			W	(0.0-0.14)	Kleinert et al. (1974)
" "	Great Lakes				(0.069-0.43)	Thomas (1972)

TABLE 18. CHROMIUM IN MOLLUSCS (1)

Species	Locality	Tissue	Analysis (2) PPM	Authority
Limpet *Acmaea digitalis*	California	shell	D 5.7	Graham (1972)
" "	"	soft parts	D (7.1-24.2)	"
Calico scallop *Aequipecten gibbus*	Florida	"	W (0.0-0.23) 0.10±SD 0.06	Zook et al. (1976)
Atlantic bay scallop *Aequipecten irradians*	Massachusetts	"	W (0.0-0.15) 0.05±SD 0.05	"
Clam *Amblema plicata*	Illinois	"	W (0.6-9.9)4.4	Mathis & Cummings (1973)
Common northern buccinum *Buccinum undatum*	Scotland	"	D 25.0	Mackay et al. (1972)

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Channeled whelk Busycon canaliculatum	Long Island	muscle	W	<0.8	Greig et al. (1977b)
" "	Chincoteague	"	W	<0.5	"
" "	"	digestive gland	W	<0.5	"
" "	Long Island	"	W	<0.8	"
Pteropod Cavolinia quadridentata	Gulf of Aquaba			(0.43-4.91)	Turekian et al. (1973)
Pteropod Cavolinia unicata	"			0.50±0.19	"
Scallop Chlamys opercularis	Great Britain	soft parts	D	2.2	Bryan (1973)
Scallop Chlamys septemradiata	Scotland	"	D	42.0	Mackay et al. (1972)
Black mussel Choromytilis meridionalis	S. Africa	"	W	0.10±SD 0.06	Van As et al. (1975)
" "	"	"	D	1.4	Watling & Watling (1976b)
Pteropod Clio pyramidata	Gulf of Aquaba			(1.13-4.09)	Turekian et al. (1973)
Portuguese oyster Crassostrea angulata (=Gryphaea angulata)	France coast	soft parts	D	0.5	Fukai & Broquet (1965)
Pacific oyster Crassostrea gigas	Oregon		W	(0.0-15.0) pCi/g Cr^{51}	Seymour & Lewis (1964)
" "	Pacific coast - U.S.	"	W	(0.10-0.30)	Pringle et al. (1968)

Pacific oyster Crassostrea gigas	Tasmania		D	7.9	Ayling (1973)
American oyster Crassostrea virginica	New England		W	(<0.12-3.37)	Schuster & Pringle (1969)
" "	" "	20 wks in 0.05 ppm Cr	W	(5.81-6.28)	"
" "	" "	20 wks in 0.1 ppm Cr	W	(10.87-11.49)	"
" "	Texas	shell	D	<1.0	Smith & Wright (1962)
" "	Atlantic coast-U.S.	soft parts	W	(0.04-3.40) 0.40	Pringle et al. (1968)
" "	Mobile Bay		W	(<0.1-3.3) 0.35	Kopfler & Mayer (1973)
" "	Chesapeake Bay	"	W	(0.0-0.15) 0.09±SD 0.06	Zook et al. (1976)
" "	Long Island	"	W	(0.12-0.54) 0.19±SD 0.12	"
Atlantic slipper shell Crepidula fornicata	Great Britain		W	0.3	Segar et al. (1971)
" "	"		D	2.0	"
Pteropod Cresius acicula	Gulf of Aquaba			(1.70-2.71)	Turekian et al. (1973)
White mussel Donax serra	S. Africa	soft parts	W	0.24±SD 0.03	Van As et al. (1975)
Octopus Eledone moschata	Mediterranean	whole	D	0.12	Fukai & Broquet (1965)

Clam *Fusconaia flava*	Illinois	soft parts	W	(1.1-11.6)7.7	Mathis & Cummings (1973)
Abalone *Haliotis midae*	S. Africa	"	W	0.50±SD 0.25	Van As et al. (1975)
Red abalone *Haliotis rufescens*	California	gill	D	(0.5-4.4)	Anderlini (1974)
" "	"	mantle	D	(0.0-13.0)	"
" "	"	digestive gland	D	(1.4-13.2)	"
Squid *Illex sp.*	Texas	muscle with skin	D	(3.0-4.7) 6.1	Horowitz & Presley (1977)
" "	"	muscle	D	(0.4-11.0) 5.4	"
" "	"	viscera	D	(2.7-7.1) 3.9	"
" "	"	pen	D	3.1	"
Pteropoda *Limacina retroversa*	New England		A	<1.0	Nicholls et al. (1959)
" "	South Atlantic			ND	Turekian et al. (1973)
Squid *Loligo vulgaris*	France coast	soft parts	D	0.07	Fukai & Broquet (1965)
Bent-nose macoma *Macoma nasuta*	California		D	(19.1-22.2)	Emerson et al. (1976)
Northern quahog *Mercenaria mercenaria*	Great Britain		W	0.16	Segar et al. (1971)

Northern quahog *Mercenaria mercenaria*	Great Britain		D	0.79	Segar et al. (1971)
" "	United States		W	(0.19-5.80) 0.31	Pringle et al. (1968)
" "	E. United States		W	(0.06-0.64) 0.17±SD 0.17	"
Northern horse mussel *Modiolus modiolus*	Irish Sea		W	0.03	Segar et al. (1971)
" "	"		D	0.14	"
Murex *Murex trunculus*	Mediterranean	soft parts	D	0.9	Fukai & Broquet (1965)
Soft shell clam *Mya arenaria*	Oregon		W	(0.0-78.0) pCi/g Cr^{51}	Seymour & Lewis (1964)
" "	Atlantic coast United States		W	(0.0-0.43) 0.23±SD 0.12	Zook et al. (1976)
" "	"		W	(0.10-5.0) 0.52	Pringle et al. (1968)
Californian mussel *Mytilus californianus*	Oregon		W	(0.0-140.0) pCi/g Cr^{51}	Seymour & Lewis (1964)
" "	California	shell	D	(<5.7-14.2)	Graham (1972)
" "	"	soft parts	D	(<1.5-7.8)	"
" "	Pacific Coast United States	"	D	(1.2-1.8)	Alexander & Rowland (1966)
" "	California	digestive gland	D	(0.8-61.0)	Alexander & Young (1976)
Common mussel *Mytilus edulis*	New Zealand		D	(9.0-24.0) 16.0	Brooks & Rumsby (1965)

Common mussel Mytilus edulis	New Zealand	mantle	D	<3.0	Brooks & Rumsby (1965)
" "	"	gill	D	10.0	"
" "	"	muscle	D	<3.0	"
" "	"	visceral mass	D	29.0	"
" "	"	intestine	D	<3.0	"
" "	"	foot	D	<3.0	"
" "	"	gonad	D	<3.0	"
" "	"	shell	D	<3.0	"
" "	"	soft parts	D	1.0	"
" "	Mediterranean	"	D	1.0	Fukai & Broquet (1965)
" "	Belgium	"	D	(0.56-2.0) 1.23	Bertine & Goldberg (1972)
" "	Netherlands	"	D	6.6	"
" "	Irish Sea Great Britain	"	W	0.17	Segar et al. (1971)
" "	"	"	D	1.5	"
" "	California	shell	D	5.7	Graham (1972)
" "	"	soft parts	D	(<1.5-7.6) 4.0	"
" "	Oregon		W	(0.0-140.0) pCi/g Cr^{51}	Seymour & Lewis (1964)
" "	Norway	soft parts	D	(4.0-49.0)	Lande (1977)
" "	"	shell	D	(1.0-2.0)	"

Common mussel Mytilus edulis	Mediterranean	soft parts	D	(0.5-28.8) 7.5	Fowler & Oregioni (1976)
" "	California	digestive gland	D	(2.0-15.2)	Alexander et al. (1975)
Mussel Mytilus galloprovincialis	Mediterranean		D	(0.5-28.8)	Fowler & Oregione (1976)
Giant western nassa Nassarius fossatus	California		D	12.1	Emerson et al. (1976)
Eastern mud nassa Nassarius obsoletus	Oregon		W	(0.0-5.3) pCi/g Cr^{51}	Seymour & Lewis (1964)
Nut clam Nucula sulcata	Scotland	soft parts	D	18.0	Mackay et al. (1972)
Squid Ommastrephes illecebrosa	New England		A	<1.0	Nicholls et al. (1959)
Oyster Ostrea sinuata	New Zealand		D	(2.0-6.0) 3.0	Brooks & Rumsby (1965)
" "	"	mantle	D	<3.0	"
" "	"	gill	D	<3.0	"
" "	"	muscle	D	<3.0	"
" "	"	kidney	D	<3.0	"
" "	"	heart	D	9.0	"
" "	"	shell	D	<3.0	"
Limpet Patella intermedia	France coast	soft parts	D	0.8	Fukai & Broquet (1965)

Limpet Patella intermedia	France coast	shell	D	0.07	Fukai & Broquet (1965)
Limpet Patella vulgata	Israel at discharge pipe	soft parts	D	(18.5-23.2)	Navrot et al. (1974)
" "	" not at discharge pipe	"	D	(9.7-14.0)	"
" "	Israel	shell	D	(9.3-10.4)	"
" "	Norway		D	(7.0-17.0)	Lande (1977)
" "	"		D	(1.0-2.0)	"
Giant pacific scallop Pecten caurinus (=Patinopecten caurinus)	Oregon		W	(3.8-18.0) pCi/g Cr^{51}	Seymour & Lewis (1964)
Scallop Pecten jacobaeus	France coast	soft parts	D	1.1	Fukai & Broquet (1965)
Scallop Pecten maximus	Great Britain	"	D	1.3	Bryan (1973)
Scallop Pecten novae-zelandiae	New Zealand		D	(3.0-23.0) 16.0	Brooks & Rumsby (1965)
" "	"	mantle	D	<3.0	"
" "	"	gill	D	145.0	"
" "	"	muscle	D	<3.0	"
" "	"	visceral mass	D	8.0	"
" "	"	intestine	D	24.0	"
" "	"	kidney	D	17.0	"
" "	"	foot	D	8.0	"
" "	"	gonad	D	<3.0	"

Scallop *Pecten novae-zelandiae*	New Zealand	shell	D	<3.0	Brooks & Rumsby (1965)
Atlantic deep sea scallop *Placopecten magellanicus*	Delaware		D	(0.89-6.88) 3.08	Pesch et al. (1977)
" "	E. United States		W	(0.0-0.12) 0.06±SD 0.04	Zook et al. (1976)
Common Pacific littleneck *Protothaca staminea*	California	soft parts	D	<1.5	Graham (1972)
" "	"	shell	D	<5.7	"
Clam *Quadrula quadrula*	Illinois	soft parts	W	(1.8-8.3)4.7	Mathis & Cummings (1973)
Pacific razor clam *Siliqua patula*	Oregon		W	(0.0-38.0) pCi/g Cr^{51}	Seymour & Lewis (1964)
Surf clam *Spisula solidissima*	Virginia	heart & tongue	W	(0.20-0.69) 0.39±SD 0.15	Zook et al. (1976)
" "	Delaware		W	<0.7	Greig et al. (1977b)
" "	Chincoteague		W	<0.5	"
Pteropod *Styliola tubula*	South Atlantic			(0.66-0.72)	Turekian et al. (1973)
Littleneck clam *Tapes decussatus* (=Venerubis decussatus)	Mediterranean		D	1.6	Fukai & Broquet (1965)
Littleneck clam *Tapes semidecussata*	California	shell	D	10.3±SD 0.7	Graham (1972)
" "	"	soft parts	D	10.3±SD 0.7	"

Beaded periwinkle *Tectarius muricatus*	Puerto Rico	soft parts	W	(3.0-12.0)7.1	Lowman et al. (1965)
" "	"	"	D	(13.0-42.0)21.8	"
" "	"	"	W	68.2	Stevenson et al. (1966)
" "	"	shell	W	43.52	"
Black tegula *Tegula funebralis*	California	"	D	(<5.7-15.8)	Graham (1972)
" "	"	soft parts	D	(<1.5-12.2)	"
Short-spired dogwinkle *Thais emarginata*	Oregon		W	(0.0-4.3) pCi/g Cr^{51}	Seymour & Lewis (1964)
" "	California	"	D	1.5	Graham (1972)
" "	"	shell	D	(<5.7-10.5)	"
Venus shell *Venus verrucosa*	Mediterranean	soft parts	D	0.5	Fukai & Broquet (1965)

CHROMIUM IN ARTHROPODA[1]

Species	Locality	Tissue	Analysis PPM[2]	Authority
CRUSTACEA				
Decapoda				
Ghost shrimp *Callianassa californiensis*	California		D (3.4-5.7)	Emerson et al. (1976)
Blue crab *Callinectes sapidus*	Chesapeake Bay	muscle	W (0.07-0.35) 0.18±SD 0.09	Zook et al. (1976)
Crab *Cancer anthonyi*	California		W (0.1-0.5)	Fowler et al. (1975)
Rock crab *Cancer irroratus*	Long Island	muscle	W 0.6±SE 0.12	Greig et al. (1977b)
" "	New York Bight	"	W <0.5	"
" "	Delaware	"	W <0.3	"
" "	Chincoteague	"	W <0.5	"
" "	Long Island to Chincoteague	digestive gland	W (0.4-1.2)	"
" "	"	gill	W (0.80-2.5)	"
" "	New York Bight		D (<3.5-35.2)	" (1977a)

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Shore crab Carcinus maenas	Mediterranean	soft parts	D	0.4	Fukai & Broquet (1965)
" "	Norway	"	D	8.0	Lande (1977)
Sand shrimp Crangon allmani	Scotland	"	D	(9.0-13.0)	Mackay et al. (1972)
Sand shrimp Crangon crangon	Mediterranean	carapace	D	0.3	Fukai & Broquet (1965)
" "	"	soft parts	D	0.04	"
" "	Belgium		D	(0.04-2.1)	Bertine & Goldberg (1972)
Crab Eriphia verrucosa	"	carapace	D	0.4	Fukai & Broquet (1965)
" "	"	soft parts	D	0.7	"
Red crab Geryon quinquedens	New Jersey		W	<0.52	Greig et al. (1976)
American lobster Homarus americana	United States	claw muscle	W	0.0	Schroeder et al. (1962)
" "	"	tail muscle	W	0.0	"
" "	"	digestive gland	W	0.33	"
" "	"	shell	W	0.0	"
Rock lobster Jasus lalandii	S. Africa		W	0.08±SD 0.08	Van As et al. (1975)

Crab *Mursia gaudichaudii*	California		W	ND	Fowler et al. (1975)
Pink shrimp *Pandalus borealis*	N.W. Atlantic		W	(0.0-0.25) 0.10±SD 0.07	Zook et al. (1976)
Prawn *Pandalus montagui*	Scotland	soft parts	D	(17.0-20.0)	Mackay et al. (1972)
Spiny lobster *Panulirus borealis*	Florida	tail muscle	W	(0.06-0.31) 0.14±SD 0.08	Zook et al. (1976)
King crab *Paralithodes camschatica*	Alaska	body muscle	W	(0.0-0.24) 0.10±SD 0.09	"
" "	"	leg muscle	W	(0.0-0.30) 0.13±SD 0.09	"
" "	"	muscle	D	0.09	Fukai & Broquet (1965)
Shrimp *Parapenaeus longirostris*	Mediterranean	soft parts	D	0.11	"
" "	"	carapace	D	0.5	"
Brown shrimp *Penaeus aztecus*	Texas	muscle	D	(0.4-3.8)2.1	Horowitz & Presley (1977)
" "	"	exoskeleton	D	(7.6-17.3)10.6	"
" "	"	viscera	D	(3.1-5.3)4.0	"
" "	"		W	(0.0-0.19) 0.10±SD 0.06	Zook et al. (1976)
White shrimp *Penaeus setiferus*	Mississippi		W	(0.15-0.25) 0.19±SD 0.04	"
" "	Florida		W	(0.0-0.11) 0.05±SD 0.01	"

Crab *Pisa nodipes*	Mediterranean	whole	D	1.1	Fukai & Broquet (1965)
Long-eyed swimming crab *Podophthalmus vigil*	Washington	gills absorb very high levels of Cr^{51}			Sather (1967)
Kelp crab *Pugettia producta*	California	feces	A	(ND-7.6) 4.1±3.3	Boothe & Knauer (1972)
Rock shrimp	Texas	muscle	D	(1.8-4.2) 2.8	Horowitz & Presley (1977)
" "	"	exoskeleton	D	(0.5-2.7)1.7	"
Copepoda					
Copepod *Acartia clausi*	Mediterranean	whole	D	1.5	Fukai & Broquet (1965)
" "	Greece		D	(1.51-5.25) 3.26	Zafiropoulos & Grimanis (1977)
Copepod *Centropagus hamatus* and *typicus*	New England		A	260.0	Nicholls et al. (1959)
Copepod *Clausocalanus sp.*	Mediterranean		D	2.1	Fukai & Broquet (1965)
Paracalanus sp.	"		D	2.1	"
Isopoda					
Slater *Ligia pallasii*	Oregon	whole	W	(0.0-27.0) pCi/g Cr^{51}	Seymour & Lewis (1964)

Cirripedia					
Goose barnacle *Mitella polymerus*	Oregon		W	(0.0-12.0) pCi/g Cr^{51}	Seymour & Lewis (1964)
" "	Washington	stem	D	3.6	Alexander & Rowland (1966)
" "	"	body	D	14.0	"
Euphausiacea					
Euphausia krohnii	New England		A	<1.0	Nicholls et al. (1959)
Euphausids	S. Africa (with copepods)		W	(0.05-0.15)	Van As et al. (1975)
INSECTA					
Termite *Odontotermes transvaalensis* & *Trinervitermes dispar*	Rhodesia	worker	D	1,500.0	Wild (1975)
" "	"	soldier	D	300.0	"
" "	"	queen	D	20.0	"

CHROMIUM IN ECHINODERMATA(1)

Species	Locality	Tissue	Analysis PPM(2)	Authority
Sea urchin *Arbacia lixula*	Greece	whole	D 13.0	Papadopoulou et al. (1976)
Sea Star *Asterias rubens*	Sweden	without viscera	D 0.02	Noddack & Noddack (1940)
Starfish *Astropecten irregularis*	Mediterranean	whole	D 1.2	Fukai & Broquet (1965)
Sea urchin *Brissopsis lyrifera*	Sweden	without viscera	D 0.02	Noddack & Noddack (1940)
Sea urchin *Echinaster sepositus*	Greece	whole	D 0.83	Papadopoulou et al. (1976)
Sea urchin *Echinometra lucunter*	Puerto Rico		W 43.2	Stevenson et al. (1966)
Sea cucumber *Holothuria forskalii*	Mediterranean		D 0.3	Fukai & Broquet (1965)

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Sea cucumber *Holothuria tubulosa*	Greece	whole	D	0.80	Papadopoulou et al. (1976)
Starfish *Marthasterias glacialis*	"	"	D	1.6	"
Serpent star *Ophioderma longicauda*	"	"	D	0.46	"
Brittle star *Ophiothrix suensoni*	Puerto Rico		W	24.17	Stevenson et al. (1966)
Brittle star *Ophiura texturata*	Mediterranean	whole	D	0.8	Fukai & Broquet (1965)
Paracentrotus lividus	Greece	whole	D	4.8	Papadopoulou et al. (1976)
Sea urchin *Parechinus sp.*	S. Africa		W	<0.1	Van As et al. (1975)
Starfish *Pisaster ochraceus*	Pacific coast United States		D	(3.5-12.3)	Alexander & Rowland (1966)
Sea cucumber *Stichopus regalis*	Mediterranean	without viscera	D	1.1	Fukai & Broquet (1965)
Sea cucumber *Stichopus tremulus*	Sweden	"	D	0.9	Noddack & Noddack (1940)
Sea urchin *Tripneustes esculenta*	Puerto Rico	testis	W	19.9	Stevenson et al. (1966)

CHROMIUM IN LOWER ANIMALS(1)

Species	Locality	Tissue	Analysis(2) PPM	Authority
PORIFERA				
Sponge *Halichondra sp.*	Sweden		D 0.2	Noddack & Noddack (1940)
COELENTERATA				
Coral *Anomacora fecunda*	W. Atlantic Ocean		D 2.0	Livingston & Thompson (1971)
Sea anemone *Anthopleura xanthigrammica*	Oregon		W (0.0-27.0) pCi/g Cr^{51}	Seymour & Lewis (1964)
Coral *Bathycyathus maculatus*	W. Atlantic Ocean		D 4.0	Livingston & Thompson (1971)
Coral *Caryophyllia clavus*	"		D <2.0	"
Coral *Caryophyllia communis*	"		D 3.0	"

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Cerianthus sp.	California	D	2.4	Emerson et al. (1976)
Coral *Cladocera patriarca*	W. Atlantic Ocean	D	2.0	Livingston & Thompson (1971)
Jelly fish *Cynaea capillata*	New England	A	0.6	Nicholls et al. (1959)
" "	Sweden	D	1.3	Noddack & Noddack (1940)
Jelly fish	New York Bight	D	<14.0	Greig et al. (1977a)
Coral *Dendrophyllia sp.*	W. Atlantic Ocean	D	2.0	Livingston & Thompson (1971)
Coral *Desmophyllum cristogalli*	"	D	(<1.0-1.2)	"
Coral *Madracis asperula*	"	D	4.0	"
Coral *Madracis mirabilis*	"	D	(0.2-14.0)	"
Coral *Madracis pharensis*	"	D	23.0	"
Coral *Meandrina areolata*	"	D	<1.0	"
Coral *Meandrina braziliensis*	"	D	(1.1-<2.0)	"
Sea anemone *Metridium dianthus*	Sweden	D	0.0	Noddack & Noddack (1940)
Coral *Montastrea annularis*	W. Atlantic Ocean	D	(<2.0-10.0)	Livingston & Thompson (1971)

Coral *Phyllangia americana*	W. Atlantic Ocean		D	<2.0	Livingston & Thompson (1971)
Coral *Porites porites*	"		D	<2.0	"
Coral *Scolmia cubensis*	"		D	(2.0-5.0)	"
Coral *Solenosmilia variabilis*	"		D	(0.94-<2.0)	"
Coral *Trochocyanthus sp.*	"		D	1.5	"
CTENOPHORA					
Comb jelly *Beroe cucumis*	New England		A	1.0	Nicholls et al. (1959)
Comb jellyfish	New York Bight		D	(<3.5-8.8)	Greig et al. (1977a)
ANNELIDA					
Polychaete worm *Aphrodite aculeata*	Mediterranean	whole	D	14.7	Fukai & Broquet (1965)
Polychaete worm *Cirriformia luxuriosa*	California		D	(4.8-75.3)	Emerson et al. (1976)
Palolo worm *Eunicia sp.*	Puerto Rico		W	(16.9-20.9)	Stevenson et al. (1966)
Polychaete worm *Hermione hystrix*	Mediterranean	whole	D	8.1	Fukai & Broquet (1965)
" "	"		trivalent Cr^{51} not accumulated		Chipman (1967)
" "			hexavalent Cr^{51} is accumulated		"

Polychaete worm *Hermione hystrix*	Mediterranean		W	1.4	Chipman (1967)
Tubificid worm *Limnodrilus hoffmeisteri*	Illinois		W	(4.0-21.0) 10.0	Mathis & Cummings (1973)
Earthworm *Lumbricus* spp. (and others)	Tennessee		D	5.0	NRCC (1976)
Lumbrineris sp.	California		D	10.2	Emerson et al. (1976)
Polychaete worm *Nephthys* sp.			A	600.0	Webb (1937)
Polychaete worm *Notomastus tenuis*	"		D	33.0	Emerson et al. (1976)
Polychaete worm *Sigambra tentacula*	"		D	(9.3-21.6)	"
Tubificid worm *Tubifex tubifex*	Illinois		W	(4.0-21.0) 10.0	Mathis & Cummings (1973)
TUNICATA					
Tunicate *Ciona intestinalis*		Cr^{51} in tests but not in soft parts			Townsley (1962)
" "	California	tunic	D	7.0	Emerson et al. (1975)
" "	"	internal organs	D	13.3	"
" "	Greece	whole	W	0.24	Papadopoulou & Kanias (1977)
" "	"	"	D	5.5	"
" "	"	tunic	W	0.075	"
" "	"	"	D	1.9	"

Tunicate Ciona intestinalis	Greece	rest of body	W	0.25	Papadopoulou & Kanias (1977)
" "	"	"	D	6.1	"
Tunicate Microcosmus sulcatus	"	whole	W	1.10	"
" "	"	"	D	6.6	"
Tunicate Salpa fusiformis	New England		A	<1.0	Nicholls et al. (1959)
CHAETOGNATHA					
Arrow worm Sagitta elegans	New England		A	1.0	Nicholls et al. (1959)
" "			W	0.02	"
Arrow worm Sagitta sp.	S. Africa (with copepods)		W	(0.0-3.6)	Van As et al. (1975)

CHROMIUM IN HIGHER PLANTS (1)

Species	Locality	Tissue	Analysis PPM (2)	Authority
Norway maple *Acer platanoides*	Connecticut	leaf	D (1.2-6.2) 2.8±SE 0.2	Smith (1973)
" "	"	twig	D (1.1-2.3) 1.6±SE 0.1	"
Red maple *Acer rubrum*	United States	green leaf	D 0.11	Schroeder et al. (1962)
" "	"	"	A 1.8	"
" "	"	red leaf	D 0.20	"
" "	"	"	A 3.2	"
" "	"	leaf	D (0.27-0.38)	Hanna & Grant (1962)
Silver maple *Acer saccharinum*	"	"	D 0.27	"
Sugar maple *Acer saccharum*	Connecticut	"	D (1.2-3.4) 1.9±SE 0.3	Smith (1973)

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Suger maple Acer saccharum	Connecticut	twig	D	(1.8-3.4) 2.3±SE 0.2	Smith (1973)
" "	New Hampshire	branch	D	(0.3-11.0)	"
" "	United States	leaf	D	0.38	Hanna & Grant (1962)
Bent grass Agrostis stolonifera	Scotland on serpentine	shoot	A	(35.0-82.0)	Shewry & Peterson (1976)
" "	Scotland chromite tailings	"	A	(25.0-65.0)	"
Onion Allium cepa	Great Britain		W	(0.04-0.83) 0.19	Thomas et al. (1974)
" "	United States		W	(0.01-0.02)	Schroeder et al. (1962)
Leek Allium porrum	Great Britain		W	(0.02-0.16) 0.08	Thomas et al. (1974)
" "	" "		D	(0.28-1.0)	Le Riche (1968)
Onion Allium schoenoprasum	Finland		A	(1.0-10.0)	Lounamaa (1956)
Alder Alnus incana	"		A	(1.0-30.0)	"
Aloe Aloe spp.			A	17.0	Baumslag & Keen (1972)
Amaranth Amaranthus spp.			A	38.0	"
Pineapple Ananas comosus			W	(0.02-0.09) 0.04	Thomas et al. (1974)

Anisotome aromatica	New Zealand on serpentine		A	115.0	Lyon et al. (1970)
Celery *Apium graveolens dulce*	Great Britain		W	(0.08-0.12) 0.11	Thomas et al. (1974)
Common thrift *Armeria maritima*	Scotland on serpentine	shoot	A	(140.0-253.0)	Shewry & Peterson (1976)
" "	" non-serpentine	"	A	14.0	"
" "	" on chromite tailings	"	A	23.0	"
Big sagebrush *Artemisia tridentata tridentata*	Idaho downwind from phosphate plant		D	(30.0-500.0)	Gough & Severson (1976)
" "	" upwind		D	(15.0-200.0)	"
" "	" downwind 3 km		D	(270.0-400.0)	"
" "	" upwind 3 km		D	(77.0-117.0)	"
Breadfruit *Artocarpus altilis*	Panama	fruit	D	2.0	Ewing et al. (1969)
Asparagus *Asparagus officinalis*	Great Britain	frozen	W	0.01	Thomas et al. (1974)
" "	" "	canned	W	(0.01-0.18)	"
Wallrue spleenwort *Asplenium rutamuraria*	Austria on serpentine	frond	A	66.0	Shewry & Peterson (1976)
Forked spleenwort *Asplenium septentrionale*	Finland		A	(1.0-1000.0)	Lounamaa (1956)

Maidenhair spleenwort *Asplenium trichomanes*	Finland		A	(1.0-100.0)	Lounamaa (1956)
Saltbush *Atriplex confertifolia*	Nevada	leaf	D	0.4	Wallace & Romney (1972)
" "	"	stem	D	<0.1	"
" "	"	root	D	0.1	"
Oats *Avena sativa*	on serpentine	leaf & stem	D	(3.0-11.0)	Pratt (1966)
" "	United States	oatmeal	W	0.06	Schroeder et al. (1962)
Beet *Beta vulgaris*	" "	root	W	(0.01-0.03)	"
" "	Great Britain		W	(0.04-0.12) 0.08	Thomas et al. (1974)
" "	"	top	D	(0.8-1.2)	LeRiche (1968)
" "	"	root	D	(0.3-1.1)	"
Swiss chard *Beta vulgaris cicla*	Maryland	leaf & stem	D	(1.0-1.1)	Furr et al. (1976)
" " "	United States	"	W	0.06	Schroeder et al. (1962)
White birch *Betula papyrifera*	United States	leaf	D	0.19	"
" "	"	"	A	3.2	"
Birch *Betula verrucosa*	Finland		A	(1.0-60.0)	Lounamaa (1956)
Kale *Brassica oleracea acephala*	Kentucky		D	0.33±0.06	Nadkarni & Ehmann (1970)

Cauliflower *Brassica oleracea botrytis*	United States	flower	W	0.02	Schroeder et al. (1962)
Cabbage *Brassica oleracea capitata*	"	leaf	W	(0.01-0.06)	"
" " "	Great Britain		W	(0.05-0.29)0.15	Thomas et al. (1974)
Brussels sprouts *Brassica oleracea gemmifera*	"	fresh	W	(0.01-0.64)0.14	"
" " "	"	frozen	W	(0.08-0.25)0.16	"
Kohlrabi *Brassica oleracea gongylodes*	United States		W	0.0	Schroeder et al. (1962)
Broccoli *Brassica oleracea italica*	Great Britain		W	(0.06-0.33) 0.19	Thomas et al. (1974)
Turnip *Brassica rapa*	United States	leaf	W	(0.04-0.06)	Schroeder et al. (1962)
Northern reed grass *Calamagrostis canadensis*	Canada	leaf	D	(0.59-21.9)	O'Toole et al. (1971)
Scotch heather *Calluna vulgaris*	Finland		A	(1.0-100.0)	Lounamaa (1956)
" "	Scotland on serpentine	shoot	A	(252.0-417.0)	Shewry & Peterson (1976)
" "	" on chromite tailings	"	A	190.0	"
Tea *Camellia sinensis*		leaf		0.177±SD 0.022	Shah et al. (1971)
Pepper *Capsicum annuum*	United States	fruit	W	0.19	Schroeder et al. (1962)

Bush red pepper *Capsicum frutescens*			D	1.28	Toepfer et al. (1973)
" "	United States	fruit	W	0.01	Schroeder et al. (1962)
Sedge *Carex pendula*			D	0.12	Horowitz et al. (1974)
Hickory *Carya spp.*	Tennessee		D	(0.2-0.4)	Van Hook et al. (1974)
Cassinia banksii	New Zealand on serpentine	leaf	A	52.0	Lyon et al. (1970)
Cassinia cunninghami	" "	"	A	(52.0-60.0)	"
Cassinia vauvilliersii	" "	"	A	(815.0-1,300.0)	" (1971)
" "	" non-serpentine	"	A	(13.0- 30.0)	"
Cassinia vauvilliersii var. *serpentina*	" "	"	A	(13.0-4,600.0)	"
Cerastium *Cerastium holosteoides*	Scotland on serpentine	shoot	A	173.0	Shewry & Peterson (1976)
" "	" on chromite tailings	"	A	45.0	"
Cerastium *Cerastium nigrescens*	Scotland on serpentine	"	A	141.0	"
Lip fern *Cheilanthes marantae*	Austria on serpentine	"	A	46.0	"
Grapefruit *Citrus paradisi*	Great Britain		W	(0.01-0.07) 0.04	Thomas et al. (1974)
Orange *Citrus sinensis*	" "	fruit	W	(<0.01-0.05) 0.02	"

Orange Citrus sinensis		fruit	D	0.31	Toepfer et al. (1973)
" "		leaf	D	(0.2-10.0)	Pratt (1966)
Coconut Cocos nucifera	Panama	fruit	D	0.15	Ewing et al. (1969)
Coffee Coffea arabica		bean		<0.040	Shah et al. (1971)
Coprosma parviflora	New Zealand on serpentine		A	(44.0-740.0)	Lyon et al. (1970)
Cucumber Cucumis sativus	Great Britain		W	(0.15-0.2) 0.17	Thomas et al. (1974)
" "	United States	fruit	W	(0.01-0.03)	Schroeder et al. (1962)
Summer squash Cucurbita sp.	" "	"	W	0.02	"
Brittle bladder fern Cystopteris fragilis	Finland		A	(3.0-300.0)	Lounamaa (1956)
Dacrydium biforme	New Zealand on serpentine		A	(36.0-44.0)	Lyon et al. (1970)
Orchard grass Dactylis glomerata	United States	shoot	D	1.30	Schroeder et al. (1962)
" "	" "	"	A	22.5	"
" "		flower	D	0.5	Davey & Mitchell (1968)
" "		leaf	D	1.5	"
" "		sheath	D	0.4	"
" "		stem	D	0.1	"
Daphne Daphne mezereum	Finland		A	(3.0-100.0)	Lounamaa (1956)

Carrot *Daucus carota*	Great Britain		W	(<0.01-0.13) 0.08	Thomas et al. (1974)
" "	United States	root	W	(0.0-0.03)	Schroeder et al. (1962)
" "		top		(0.44-0.94)	LeRiche (1968)
" "		root		(0.03-0.09)	"
Wavy hair grass *Deschampsia caespitosa*	Finland		A	(3.0-100.0)	Lounamaa (1956)
Finland pink *Dianthus superbus*	"		A	(3.0-100.0)	"
Dicoma niccolifera	Rhodesia		A	30,000	Wild (1974b)
Dracophyllum filifolium var. *collinum*	New Zealand on serpentine		A	300.0	Lyon et al. (1970)
Dracophyllum pronum	" "		A	4,400.0	"
Dracophyllum uniflorum	" "		A	2,900.0	"
Canada waterweed *Elodea canadensis*			D	0.43	Horowitz et al. (1974)
Crowberry *Empetrum nigrum*	Finland		A	(3.0-600.0)	Lounamaa (1956)
Encephalartos lehmanii			D	(0.05-0.53)	Horowitz et al. (1974)
Mormon tea *Ephedra gerardiana*			D	(0.45-0.56)	"
Horwetail *Equisetum giganteum*			D	0.45	"
Beech *Fagus grandifolia*	United States	leaf	D	0.26	Hanna & Grant (1962)

Beech *Fagus grandifolia*	United States	leaf	D	0.29	Schroeder et al. (1962)
" "	" "	"	A	5.6	"
Fescue grass *Festuca ovina*	Finland		A	(3.0-100.0)	Lounamaa (1956)
" "	Scotland on serpentine	shoot	A	132.0	Shewry & Peterson (1976)
Red fescue *Festuca rubra*	" "	"	A	(63.0-93.0)	"
" "	" on chromite tailings	"	A	(35.0-49.0)	"
Fescue grass *Festuca vivipara*	Scotland on serpentine	"	A	32.0	"
Strawberry *Fragaria vesca*			D	0.34	Toepfer et al. (1973)
Gentian *Gentiana corymbifera*	New Zealand on serpentine		A	(400.0-5,400.0)	Lyon et al. (1970)
Ginkgo *Ginkgo biloba*			D	0.20	Horowitz et al. (1974)
Hebe odora	New Zealand on serpentine		A	(13.0-8,500.0)	Lyon et al. (1970)
" "	" not serpentine		A	(18.0-<30.0)	" (1971)
Barley *Hordeum vulgare*	Washington	grain	D	(0.016-0.030)	Haller et al. (1969)
" "		leaf	D	7.6	Pratt (1966)
Hybanthus floribundus	Australia		D	(0.04-12.0)	Cole (1973)
Hymenanthera alpina	New Zealand on serpentine		A	(70.0-6,000.0)	Lyon et al. (1970)

Holly *Ilex opaca*	United States	leaf	D	(0.06-0.37)	Hanna & Grant (1962)
Sweet potato *Ipomoea batatas*	Panama	tuber	D	(0.1-0.2)	Ewing et al. (1969)
Rush *Juncus articulatus*	Scotland on serpentine	shoot	A	77.0	Shewry & Peterson (1976)
Juniper *Juniperus communis*	United States	berry	D	0.49	Schroeder et al. (1962)
" "	" "	"	A	14.5	"
" "			D	(0.37-0.64)	Horowitz et al. (1974)
" "	Finland		A	(1.0-30.0)	Lounamaa (1956)
Eastern red cedar *Juniperus virginiana*	Missouri	twig & needle	D	(3.0-4.3)	Connor et al. (1970)
Mountain laurel *Kalmia latifolia*	United States	leaf	D	(0.08-0.62)	Hanna & Grant (1962)
Lettuce *Lactuca sativa*	Great Britain		W	(0.12-0.21) 0.17	Thomas et al. (1974)
" "	United States	leaf	W	0.07	Schroeder et al. (1962)
" "	" "	head	W	(0.02-0.13)	"
Fern *Lastrea phegopteris*	Finland		A	(3.0-300.0)	Lounamaa (1956)
Lentin *Lens culinaris*	United States	seed	D	0.09	Schroeder et al. (1962)

Leptospermum scoparium	New Zealand on serpentine		A	(210-9,000.0)	Lyon et al. (1970)
" "	" not on serpentine		A	(<30.0-220.0)	" (1971)
Tulip poplar *Liriodendron tulipifera*	Tennessee		D	(0.1-0.2)	Van Hook et al. (1974)
" "			D	0.37	Horowitz et al. (1974)
Honeysuckle *Lonicera xylosteum*	Finland		A	(1.0-10.0)	Lounamaa (1956)
Tomato *Lycopersicon esculentum*	Great Britain		W	(0.16-0.37) 0.24	Thomas et al. (1974)
" "	United States	fruit	W	0.01	Schroeder et al. (1962)
Lycopodium *Lycopodium australianum*	New Zealand on serpentine		A	7,700.0	Lyon et al. (1970)
Lycopodium *Lycopodium circinatum*			D	(0.33-0.59)	Horowitz et al. (1974)
Apple *Malus malus*	Great Britain	skin	W	(0.07-0.13) 0.1	Thomas et al. (1974)
" "	" "	fruit	W	(0.06-0.16)0.11	"
" "	United States	"	D	0.13	Schroeder et al. (1962)
" "	" "	"	W	0.02	"
" "	" "	"	A	5.9	"
" "	" "	leaf	D	0.33	"
" "	" "	"	A	3.2	"
" "	" "	skin	D	1.48	Toepfer (1973)

Apple Malus malus		fruit	D	0.09	Toepfer (1973)
" "	Washington	"	D	0.037±0.001	Haller et al. (1969)
Cassava Manihot utilitissima	Panama	tuber	D	(0.15-1.5)	Ewing et al. (1969)
Alfalfa Medicago sativa	United States	shoot	D	0.09	Schroeder et al. (1962)
" "	" "	"	A	1.0	"
Mint Mentha spicata	" "		W	(0.0-2.0)pCi/g	Foster (1963)
Metrosideros umbellata	New Zealand on serpentine		A	20.0	Lyon et al. (1970)
Molinia coerulea	Finland		A	(3.0-60.0)	Lounamaa (1956)
Plantian Musa paradisiaca	Panama	fruit	D	(0.1-1.2)	Ewing et al. (1969)
Banana Musa sapientum			D	0.38	Toepfer et al. (1973)
" "	Panama	"	D	(0.1-0.5)	Ewing et al. (1969)
Forget-me-not Myosotis monroi	New Zealand on serpentine		A	(460.0-3,500.0)	Lyon et al. (1970)
Myrsine divaricata			A	(52.0-850.0)	"
Tobacco Nicotiana tabacum	Kentucky	burley, leaf	D	2.5	Nadkarni & Ehmann (1970)
" "	"	cigarette, leaf	D	(0.25-6.3)	"
" "	"	pipe, leaf	D	2.8	"
" "	"	cigar, leaf	D	(3.1-6.2)	"

Beech *Nothofagus solandri* var. *cliffortioides*	New Zealand on serpentine		A	(36.0-44.0)	Lyon et al. (1970)
Notothlaspi australe	" "		A	(200.0-1,300.0)	"
Fern *Ophioglossum pendunculosum*			D	0.45	Horowitz et al. (1974)
Rice *Oryza sativa*	Japan	grain	W	0.04	Schroeder et al. (1962)
" "		"	W	0.05	"
" "	Washington	"	D	(0.027-0.035)	Haller et al. (1969)
" "	Panama	"	D	0.6	Ewing et al. (1969)
Parsnip *Pastinica sativa*	United States	root	W	0.13	Schroeder et al. (1962)
" "	"	leaf	W	(0.08-0.19)	"
Avocado *Persea americana*	Panama	fruit	D	0.003	Ewing et al. (1969)
Lima bean *Phaseolus limensis*	Washington	bean	D	0.027±0.010	Haller et al. (1969)
Bush bean *Phaseolus vulgaris*	United States	"	W	(0.05-0.08)	Schroeder et al. (1962)
" "	Panama	"	D	0.05	Ewing et al. (1969)
" "	California	root	D	1.6	Wallace & Romney (1977)
" "	"	stem	D	0.3	"
" "	"	leaf	D	0.6	"

Phormium colensoi	New Zealand on serpentine		A	700.0	Lyon et al. (1970)
Phyllocladus alpinus	" "		A	(13.0-52.0)	"
Water plant *Phyllospadix iwatensis*	Sea of Japan		D	8.8	Saenko et al. (1976)
Norway spruce *Picea abies*	Connecticut	leaf	D	(2.3-3.4) 2.6±SD 0.4	Smith (1973)
" "	"	twig	D	(4.6-5.7) 4.9±SD 0.4	"
" "	Finland		A	(1.0-100.0)	Lounamaa (1956)
Red spruce *Picea rubra*	United States	leaf	D	0.24	Schroeder et al. (1962)
" "	" "	"	A	6.9	"
Heath *Pieris japonica*	" "	"	D	(0.01-0.60)	Hanna & Grant (1962)
Pimelia suteri	New Zealand on serpentine		A	3,200.0	Lyon et al. (1970)
Short leaf pine *Pinus echinata*	Tennessee		D	(0.1-0.3)	Van Hook et al. (1974)
Ponderosa pine *Pinus ponderosa*	Idaho	wood	D	(0.02-0.9)	Sheppard & Funk (1975)
Scotch pine *Pinus silvestris*	Finland		A	(1.0-60.0)	Lounamaa (1956)
Eastern white pine *Pinus strobus*	United States	leaf	D	0.49	Schroeder et al. (1962)
" "	" "	"	A	15.8	"
" "	" "	"	D	(0.25-2.4)	Hanna & Grant (1962)

Pea *Pisum sativum*	Great Britain		W	(0.12-1.13) 0.38	Thomas et al. (1974)
" "	Washington	seed	D	0.034±0.011	Haller et al. (1969)
Plantain *Plantago maritima*	Scotland on serpentine		A	91.0	Shewry & Peterson (1976)
" "	" on chromite tailings		A	(16.0-56.0)	"
" "	" non-serpentine		A	5.0	"
Sycamore, American plane tree *Platanus occidentalis*	United States	leaf	D	0.23	Hanna & Grant (1962)
Podocarpus *Podocarpus totara*	New Zealand on serpentine		A	80.0	Lyon et al. (1970)
Polygonatum odoratum	Finland		A	(1.0-60.0)	Lounamaa (1956)
Polypody fern *Polypodium vulgare*	"		A	(1.0-300.0)	"
European aspen *Populus tremula*	"		A	3.0	"
Quaking aspen *Populus tremuloides*	United States	leaf	D	0.25	Schroeder et al. (1962)
" "	" "	"	A	4.0	"
Eel grass *Posidonia oceanica*	Mediterranean		D	(1.3-1.9)	Fukai & Broquet (1965)
Self heal *Prunella vulgaris*	Scotland on serpentine		A	82.0	Shewry & Peterson (1976)

Apricot *Prunus armeniaca*		canned	W	(0.02-0.08)0.04	Thomas et al. (1974)
Garden plum *Prunus domestica*	Great Britain	"	W	(<0.01-2.64)	"
" "	" "	fresh	W	(<0.01-0.01)	"
" "	United States	fruit	W	0.01	Schroeder et al. (1962)
Peach *Prunus persica*			W	(0.03-0.06) 0.05	Thomas et al. (1974)
" "	" "	fruit	W	0.01	Schroeder et al. (1962)
Wild cherry *Prunus serotina*	" "	leaf	D	0.57	"
" "	" "	"	A	7.9	"
Fern *Psilotum triquetrum*			D	(0.27-0.97)	Horowitz et al. (1974)
Pulmonaria saccharata			D	0.43	"
Mountain ash *Pyrus americana*	United States	leaf	D	0.70	Schroeder et al. (1962)
" "	" "	"	A	7.7	"
Pear *Pyrus communis*	Great Britain	skin	W	(0.2-0.5) 0.3	Thomas et al. (1974)
" "	" "	fruit	W	(0.7-0.32) 0.18	"
" "	United States	"	W	0.01	Schroeder et al. (1962)
" "		whole fruit	D	0.03	Pratt (1966)
" "		pericarp	D	0.50	"
" "		peel	D	0.85	"

Pear Pyrus communis	Washington	fruit	D	0.029±0.001	Haller et al. (1969)
Pin oak Quercus palustris	United States	leaf	D	(2.3-12.5) 3.8±SD 0.8	Smith (1973)
" "	" "	twig	D	(1.2-5.7) 2.8±SD 0.4	"
" "		leaf	D	(0.10-0.58)	Hanna & Grant (1962)
Chestnut oak Quercus prinus	Tennessee		D	(0.05-0.3)	Van Hook et al. (1974)
Red oak Quercus rubra	United States	leaf	D	0.17	Schroeder et al. (1962)
" "	" "	"	A	9.2	"
" "	" "	acron	D	0.02	"
" "	" "	"	A	0.9	"
Garden radish Raphanus sativus	" "	root	W	0.0	"
Rhubarb Rheum rhaponticum	" "	stem	W	0.02	"
" "	Great Britain		W	(0.01-1.84) 0.66	Thomas et al. (1974)
Rhododendron Rhododendron roseum	United States	leaf	D	(0.06-0.38)	Hanna & Grant (1962)
European black currant Ribes nigrum	Great Britain		W	(0.02-0.08) 0.03	Thomas et al. (1974)
Water cress Rorippa nasturtium-aquaticum	" "		W	(0.05-0.31) 0.16	"
Wild rose Rosa acicularis	N.W. Territories	leaf & fruit	D	(3.5-3.9)	O'Toole et al. (1971)

Rose *Rosa majalis*	Finland	A	100.0	Lounamaa (1956)
Red raspberry *Rubus idaeus*	"	A	(1.0-30.0)	"
Blackberry *Rubus sp.*	United States fruit	W	0.0	Schroeder et al. (1962)
Boysenberry *Rubus sp.*		W	(0.0-0.9) pCi/g	Foster (1963)
Blackberry *Rubus saxatilis*	Scotland on serpentine shoot	A	103.0	Shewry & Peterson (1976)
Sour grass *Rumex acetosella*	Finland on serpentine	A	(1.0-10.0)	Lounamaa (1956)
Sugar cane *Saccharum officinarum*	Panama	D	0.7	Ewing et al. (1969)
" "		D	0.02	Toepfer et al. (1973)
Sagina sp.	Scotland on serpentine	A	(111.0-344.0)	Shewry & Peterson (1976)
Water fern *Salvinia auriculata*		D	(1.0-4.4)	Horowitz et al. (1974)
Saxifrage *Saxifraga granulata*	Finland on serpentine	A	(1.0-10.0)	Lounamaa (1956)
Rye *Secale cerealis*	United States seed	W	0.05	Schroeder et al. (1962)
" "	" " whole	W	0.04	"
" "	Ontario on sludge-amended soil	D	(2.2-3.3)	Bates et al. (1975)

Sedum Sedum telephium	Finland on serpentine		A	(1.0-1000.0)	Lounamaa (1956)
Selaginella Selaginella willdenowii			D	0.43	Horowitz et al. (1974)
Moss campion Silene acaulis	Scotland on serpentine		A	41.0	Shewry & Peterson (1976)
" "	" non-serpentine		A	16.0	"
Silene maritima	" on serpentine		A	74.0	"
" "	" on chromite tailings		A	10.0	"
" "	" non-serpentine		A	9.0	"
Silene otites	Austria on serpentine		A	36.0	"
Silene vulgaris	" "		A	20.0	"
Potato Solanum tuberosum	United States	tuber	W	0.0	Schroeder et al. (1962)
" "		old	D	0.55	Toepfer et al. (1973)
" "		new	D	0.57	"
" "	Great Britain		W	(0.06-0.4) 0.15	Thomas et al. (1974)
" "		tuber	D	0.002	Pratt (1966)
European ash Sorbus aucuparia	Finland		A	(1.0-30.0)	Lounamaa (1956)
Spinach Spinacia oleracea	Great Britain		W	(0.12-0.28) 0.2	Thomas et al. (1974)
" "	United States	leaf	W	(0.0-0.05)	Schroeder et al. (1962)

Spinach *Spinacia oleracea*			D	1.03	Toepfer et al. (1973)
Chickweed *Stellaria roughii*	New Zealand on serpentine		A	(350.0-3,600.0)	Lyon et al. (1970)
Meadow succisa *Succisa pratensis*	Scotland on serpentine	shoot	A	59.0	Shewry & Peterson (1976)
Sutera fodina			A	48,000	Wild (1974b)
Yew *Taxus sp.*	Connecticut	leaf	D	(2.3-5.7) 3.9±SE 0.3	Smith (1973)
" "	"	twig	D	(2.3-16.3) 6.0±SE 1.4	"
Thalassia testudinum	Puerto Rico		W	10.5	Stevenson et al. (1966)
Cocoa *Theobroma cacao*	Panama	bean	D	0.50	Ewing et al. (1969)
Thymus drucei	Scotland on serpentine	shoot	A	(108.0-152.0)	Shewry & Peterson (1976)
" "	" on chromite tailings	"	A	(22.0-87.0)	"
" "	" non-serpentine	"	A	32.0	"
Thymus serpyllum	Austria on serpentine	"	A	27.0	"
" "	Finland		A	(3.0-100.0)	Lounamaa (1956)
Arborvitae *Thuja occidentalis*	United States	leaf	D	0.35	Schroeder et al. (1962)
" "	" "	"	A	6.7	"
" "	" "	bud	A	0.0	"

Spanish moss *Tillandsia usneoides*	United States	whole plant	A	(7.0-1,500.0) geom. mean 57.0	Shacklette & Connor (1973)
White clover *Trifolium repens*	" "	shoot	D	0.34	Schroeder et al. (1962)
Wheat *Triticum aestivum*	" "	flour	D	(0.17-0.38)	Zook et al. (1970)
" "	" "	seed	D	(0.003-0.043)	Welch & Cary (1975)
" "	Arizona	grain	D	0.1	Cannon (1969)
" "	"	"	A	3.4	"
" "		leaf	D	(4.5-14.8)	Pratt (1966)
" "		grain	W	0.08	Schroeder et al. (1962)
Eastern hemlock *Tsuga canadensis*	Connecticut	leaf	D	(1.2-4.6) 2.8±SE 0.4	Smith (1973)
" "	"	twig	D	(1.2-4.6) 3.5±SE 0.4	"
" "		leaf	D	(0.37-0.56)	Hanna & Grant (1962)
Cranberry *Vaccinium macrocarpon*		jelly	W	0.0	Thomas et al. (1974)
Blueberries *Vaccinium sp.*			D	0.22	Toepfer et al. (1973)
Vaccinium vitis-idaea	Finland		A	(1.0-100.0)	Lounamaa (1956)
Cowpea *Vicia cracca*			A	(10.0-100.0)	"

Viscaria vulgaris	Finland		A	(1.0-300.0)	Lounamaa (1956)
Grape Vitis sp.	United States	raisin	D	0.075±0.011	Haller et al. (1969)
" "	" "	"	W	0.02	Schroeder et al. (1962)
Fern Woodsia ilvensis	Finland		A	(3.0-30.0)	Lounamaa (1956)
Corn Zea mays	Panama	seed	D	0.25	Ewing et al. (1969)
" "	United States	kernel	W	0.02	Schroeder et al. (1962)
" "	" "	oil	W	0.47	"
" "		cornmeal	D	(0.06-0.13)	Toepfer et al. (1973)
" "	Arizona	grain	D	0.1	Cannon (1970)
" "	"	"	A	3.4	"
Eel grass Zostera asiatica	Sea of Japan		D	4.3	Saenko et al. (1976)
Eel grass Zostera sp.	Mediterranean		D	4.2	Fukai & Broquet (1965)
"Black pepper"				2.26	Schroeder et al. (1962)
" "			D	0.38	Toepfer et al. (1973)

CHROMIUM IN LOWER PLANTS[1]

Species	Locality	Tissue	Analysis[2] PPM	Authority
MOSSES				
Hylocomium splendens	Finland		A (10.0-100.0)	Lounamaa (1956)
" "	S. Sweden & Norway		D (4.0-6.0)	Ruhling & Tyler (1973)
" "	"		D (<1.0-1.5)	"
Hypnum cupressiforme	Sweden		D (5.3-14.0)	" (1969)
" "	N.E. Götland		D 4.5	"
" "	Skane		D 7.9	"
" "	Sweden, museum specimens, (1870-1969)		D (1.0-15.0)	"
" "	" in region of ferro alloy plant		D 12,000.0	"
" "	" "normal"		D 10.0	"

[1] Blank spaces indicate information not available or not applicable. ? indicates questionable data.

[2] W, D or A indicates on a Wet, Dry or Ashed basis. A single number indicates a single determination or mean. (x-y) indicates range of values, followed by the mean. ± Standard deviation (SD), standard error (SE), median, and geometric mean are indicated as reported. pCi/g - picocuries per gram.

Hypnum cupressiforme		D	8.0	Horowitz et al. (1974)
Marchantia polymorpha		D	(1.0-14.0)	"
Polytrichum commune		D	2.5	"
Rhacomitrium lanuginosum	Finland	A	(100.0-300.0)	Lounamaa (1956)
Sphagnum acutifolium		D	7.0	Horowitz et al. (1974)
Sphagnum angustifolium	S. Finland	D	2.2	Pakarinen & Tolonen (1976)
" "	Great Slave Lake, N.W.T.	D	0.6	"
Sphagnum balticum	S. Finland	D	2.3	"
Sphagnum fuscum	"	D	2.8	"
" "	Finland	D	(2.0-7.8)5.0	"
" "	Great Slave Lake, N.W.T.	D	0.5	"
" "	Edmonton, Alberta	D	2.4	"
Sphagnum magellanicum	S. Finland	D	3.0	"
Tortella tortuosa	Finland	A	(10.0-300.0)	Lounamaa (1956)
LICHENS				
Cladina alpestris	Finland	A	(10.0-1,000.0)	"
Cladonia retipora		D	4.6	Horowitz et al. (1974)
Lecanora rubina	Colorado	A	30.0	Leroy & Koksoy (1962)
Parmelia centrifuga	Finland	A	(10.0-300.0)	Lounamaa (1956)

Parmelia centrifuga	Finland on serpentine		A	600.0	Lounamaa (1956)
Parmelia conspersa	Colorado		A	(50.0-150.0)	Leroy & Koksoy (1962)
Parmelia saxatilis	Finland		A	(200.0-10,000.0)	Lounamaa (1956)
Peltigera canina	"		A	(6.0-30.0)	"
Peltigera rufescens	Great Britain Distance from steel smelter	0 m		127.4	Seaward (1973)
" "	" "	100 m		64.26	"
" "	" "	270 m		61.37	"
" "	" "	440 m		32.76	"
" "	" "	610 m		41.9	"
" "	" "	780 m		24.84	"
" "	" "	910 m		25.81	"
Stereocaulon paschale	Finland		A	(10.0-30.0)	Lounamaa (1956)
Umbilicaria hyperborea	Colorado		A	(100.0-150.0)	Leroy & Koksoy (1962)
Xanthoria elegans	"		A	150.0	"
FUNGI					
Alcuria aurantia			D	2.7	Horowitz et al. (1974)
Aspergillus microcysticus			D	27.0	"
Bulgaria inquinans			D	1.1	"
Clavulina cinerea			D	1.1	"
Elaphomyces granulatus			D	0.43	"
Hypoxylon fragiforme			D	0.65	"

Lycoperdon pyriforme	D	3.0	Horowitz et al. (1974)
Scleroderma verucosa	D	9.0	"
Stereum hirsutum	D	3.3	"
"Mushroom"	W	0.04	Toepfer et al. (1973)
"	D	1.27	"

CHROMIUM IN ALGAE (1)

Species	Locality	Tissue	Analysis (2) PPM	Authority
Brown alga *Agarum cribosum*	Sea of Japan		D (12.05-14.19)	Gryzhankova et al. (1973)
" "	"		D 11.8	Saenko et al. (1976)
Red alga *Ahnfeltia plicata*			D 2.9	Horowitz et al. (1974)
Amphiroa fragilissima	Puerto Rico		W 12.9	Stevenson et al. (1966)
Anacystis nidulas			D 1.2	Horowitz et al. (1974)
Aphanizomenon flos-aquae			D 9.0	"
Knotted wrack *Ascophyllum nodosum*	Scotland		D (0.7-1.9)	Black & Mitchell (1952)
" "	"		W 0.47	"
" "	Norway		D (1.0-13.0)	Lande (1977)
" "	Great Britain		D (2.2-2.8)	Foster (1976)

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Red alga *Bryothamnion triquetum*	Puerto Rico		W	4.71	Stevenson et al. (1966)
Caulerpa prolifera			D	11.0	Horowitz et al. (1974)
Red alga *Ceramium gardneri*	Oregon		W	(45.0-190.0) pCi/g Cr^{51}	Seymour & Lewis (1964)
Chara *Chara fragilis*			D	0.82	Horowitz et al. (1974)
Red alga *Chondrus yendoi*	Sea of Japan		D	9.0	Saenko et al. (1976)
Brown alga *Chorda filum*	"		D	(2.37-3.08)	Gryzhankova et al. (1973)
" "	"		D	6.2	Saenko et al. (1976)
Brown alga *Chordaria maggelanica*	"		D	5.31±SD 0.61	Gryzhankova et al. (1973)
Green alga *Cladophora fascicularis*	Puerto Rico		W	0.61	Stevenson et al. (1966)
Brown alga *Coccophora langsdorfii*	Sea of Japan		D	2.29	Gryzhankova et al. (1973)
Green alga *Codium elongatum*	Mediterranean		D	0.4	Fukai & Broquet (1965)
Green alga *Codium isthomocladus*	Puerto Rico		W	8.13	Stevenson et al. (1966)
Green alga *Codium sp.*	Sea of Japan		D	(4.70-5.70)	Gryzhankova et al. (1973)

Green alga Codium tomentosum	Israel	D	(2.6-2.7)	Roth & Hornung (1977)
Green alga Codium yessoensis	Bay of Japan	D	21.9	Saenko et al. (1976)
Red alga Corallina virgata	Israel	D	6.7	Roth & Hornung (1977)
Brown alga Costaria costata	Bay of Japan	D	3.5	Saenko et al. (1976)
Cymopolia barbata	Puerto Rico	W	11.73	Stevenson et al. (1966)
Brown alga Cystoseira fimbriata	Mediterranean	D	1.0	Fukai & Broquet (1965)
Brown alga Cystoseira myriophylloides	"	D	1.4	"
Green alga Derbesia marina	Oregon	W	94.0pCi/g Cr^{51}	Seymour & Lewis (1964)
Brown alga Dictyopteris justii	Puerto Rico	W	1.78	Stevenson et al. (1966)
" "	"	W	(1.9-8.5)4.6	Lowmann et al. (1965)
" "	"	D	(16.0-33.0) 25.5	"
Brown alga Dictyosphaeria cavernosa	"	W	10.33	Stevenson et al. (1966)
Brown alga Dictyota dichotoma	Sea of Japan	D	1.87±SD 0.24	Gryzhankova et al. (1973)

Brown alga *Dictyota divaricata*	Puerto Rico	W	0.49	Stevenson et al. (1966)
Kelp *Ecklonia maxima*	S. Africa	W	0.13±SD 0.15	Van As et al. (1975)
Green alga *Enteromorpha linza*	Mediterranean	D	1.6	Fukai & Broquet (1965)
Green alga *Enteromorpha prolifera*	Bay of Japan	D	23.4	Saenko et al. (1976)
Green alga *Enteromorpha ralfsii*	France coast	D	0.9	Fukai & Broquet (1965)
Green alga *Enteromorpha sp.*	Mediterranean	D	0.4	"
" "	Sea of Japan	D	(4.55-6.35)	Gryzhankova et al. (1973)
Green alga *Enteromorpha tubulosa*	Oregon	W	0.0 pCi/g Cr^{51}	Seymour & Lewis (1964)
Red alga *Eudocladia muricata*	"	W	0.0 pCi/g Cr^{51}	"
Bladder wrack *Fucus ceranoides*	France coast	D	0.6	Fukai & Broquet (1965)
Wrack *Fucus furcatus*	Oregon	W	(0.0-55.0) pCi/g Cr^{51}	Seymour & Lewis (1964)
Wrack *Fucus serratus*	Scotland	D	(0.7-2.6)	Black & Mitchell (1952)
" "	"	W	0.14	"

Wrack *Fucus spiralis*	Scotland		D	(0.9-3.7)	Black & Mitchell (1952)
" "	"		W	0.68	"
Bladder wrack *Fucus vesiculosus*	"		D	(1.5-1.8)	"
" "	"		W	0.35	"
" "	France coast		D	(0.6-1.0)	Fukai & Broquet (1965)
" "	Great Britain		D	(3.8-4.5)	Foster (1976)
Red alga *Gigartina rachula*	S. Africa		W	0.23	Van As et al. (1975)
Red alga *Gigartina spp.*	Oregon		W	(0.0-110.0) pCi/g Cr^{51}	Seymour & Lewis (1969)
Brown alga *Heterochordaria abietina*	Bay of Japan		D	8.7	Saenko et al. (1976)
Red alga *Jania rubens*	Mediterranean		D	4.1	Fukai & Broquet (1965)
Brown alga *Laminaria cichorioides*	Bay of Japan		D	6.7	Saenko et al. (1976)
Brown alga *Laminaria cloustoni*	Scotland	frond	D	(1.2-1.5)	Black & Mitchell (1952)
" "	"	"	D	0.9	"
Brown alga *Laminaria digitata*	"	"	D	(0.4-1.1)	"
" "	"	"	D	(1.5-1.8)	"

Brown alga Laminaria digitata	Scotland	stipe	D	(0.4-2.9)	Black & Mitchell (1952)
" "	"	frond	W	(0.15-0.31)	"
" "	"	stipe	W	(0.23-0.32)	"
Brown alga Laminaria japonica	Bay of Japan		D	2.9	Saenko et al. (1976)
Brown alga Laminaria saccharina			D	6.0	Horowitz et al. (1974)
Red alga Lithophyllum incrustans	Mediterranean		D	12.1	Fukai & Broquet (1965)
Brown alga Macrocystis pyrifera	California		A	(2.0-9.2) 5.0±SD 3.5	Boothe & Knauer (1972)
" "	"		D	0.42	Robertson et al. (1972)
Green alga Monostroma zostericola	Oregon		W	0.0 pCi/g Cr^{51}	Seymour & Lewis (1964)
Brown alga Padina gymnospora	Puerto Rico		W	9.34	Stevenson et al. (1966)
Channel wrack Pelvetia canaliculata	Scotland		D	(0.6-1.2)	Black & Mitchell (1952)
" "	"		W	0.28	"
Wrack Pelvetia wrightii	Sea of Japan		D	3.79±SD 0.34	Gryzhankova et al. (1973)

Wrack *Pelvetia wrightii*	Sea of Japan	D	6.5	Saenko et al. (1976)
Brown alga *Pelvetiopsis limitata*	Oregon	W	0.0 pCi/g Cr^{51}	Seymour & Lewis (1964)
Green alga *Penicillus capitatus*	Puerto Rico	W	7.19	Stevenson et al. (1966)
Red alga *Polysiphonia japonica*	Sea of Japan	D	22.4	Saenko et al. (1976)
Red alga *Polysiphonia spp.*	Oregon	W	(0.0-6.9) pCi/g Cr^{51}	Seymour & Lewis (1964)
Laverweed *Porphyra capensis*	S. Africa	W	0.47±SD 0.30	Van As et al. (1975)
Laverweed *Porphyra spp.*	Oregon	W	(0.0-36.0) pCi/g Cr^{51}	Seymour & Lewis (1964)
Red alga *Prionitis spp.*	"	W	(0.0-100.0) pCi/g Cr^{51}	"
Red alga *Pterochondria spp.*		W	0.78 pCi/g Cr^{51}	"
Red alga *Ptilota filicina*	Bay of Japan	D	6.0	Saenko et al. (1976)
Red alga *Rhodomela larix*	Sea of Japan	D	15.7	"
Sargassum *Sargassum lengiderum*	Puerto Rico	W	2.19	Stevenson et al. (1966)
Sargassum *Sargassum miyabei*	Sea of Japan	D	1.73±SD 0.10	Gryzhankova et al. (1973)

Sargassum *Sargassum pallidum*	Sea of Japan	leaf blade	D	1.62±SD 0.05	Gryzhankova et al. (1973)
" "	"	swim bladder	D	7.14±SD 0.35	"
" "	"	cauliform part	D	4.61±SD 0.36	"
" "	"		D	3.9	Saenko et al. (1976)
Sargassum *Sargassum sp.*	Texas		D	(1.2-2.6)1.6	Horowitz & Presley (1977)
Red ribbons *Suhria vittata*	S. Africa		W	0.87±SD 0.11	Van As et al. (1975)
Red alga *Tichocarpus crinitus*	Sea of Japan		D	2.21±SD 0.98	Gryzhankova et al. (1973)
Green alga *Udotea flabellum*	Puerto Rico		W	(0.41-100.0) 28.0	Lowman et al. (1967)
" "	"		D	(0.5-110.0) 36.0	"
Sea lettuce *Ulva fenestrata*	Sea of Japan		D	1.23±SD 0.15	Gryzhankova et al. (1973)
" "	"		D	3.5	Saenko et al. (1976)
Sea lettuce *Ulva lactuca*	Oregon		W	(0.0-18.0) pCi/g Cr^{51}	Seymour & Lewis (1964)
" "	France coast		D	1.4	Fukai & Broquet (1965)
" "	Mediterranean		D	0.4	"

Sea lettuce _Ulvaria splendens_	Sea of Japan	D	1.1	Saenko et al. (1976)
Sea lettuce _Ulva spp._	S. Africa	W	0.45±SD 0.38	Van As et al. (1975)

COBALT IN MAMMALS (1)

Species	Locality	Tissue	Analysis PPM	Authority
Cow *Bos bovis*		Co highest in liver, heart, kidney and pancreas.		Comar & Davis (1947)
" "	Russia	liver	0.35	Skoropostiznaya (1957)
" "	"	fat	0.0	"
" "	United States	muscle	W (0.08-0.94)	Schroeder et al. (1967)
" "	"	kidney	W 0.04	"
" "	"	liver	W <0.16	"
" "	"	fat	W <0.25	"
" "	"	milk	W (0.02-0.06)	"
" "	"	evaporated milk	W 0.32	"
" "	East Asia	milk	W 0.004	Leung (1973)

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Dog *Canis familiaris*	United States	kidney	W	0.26	Schroeder et al. (1967)
Coyote *Canis latrans*	"	"	W	0.26	"
" "	East Asia	milk	W	0.0	Leung (1973)
Guinea pig *Cavia porcellus*	Maryland (fed on swiss chard grown on sludge soil)	liver	D	(0.4-0.6)	Furr et al. (1976)
" "	" "	kidney	D	(0.2-0.3)	"
" "	" "	muscle	D	(0.2-0.3)	"
" "	" "	adrenal	D	(0.37-1.8)	"
" "	" "	spleen	D	(0.12-0.50)	"
Horse *Equus caballus*	United States	red blood cells	W	0.04	Schroeder et al. (1967)
Porcupine *Erethizon dorsatum*	"	heart	W	0.13	"
White-tailed deer *Odocoilus virginiensis*	"	kidney	W	0.36	Schroeder et al. (1967)
" "	"	brain	W	(0.07-0.32)	"
Sheep *Ovus aries*	"		W	0.37	Schroeder et al. (1967)
" "		lamb, muscle	W	(0.01-0.27)	"
" "		Co highest in liver, heart, kidney, and pancreas.			Keener et al. (1951)
" "	East Asia	muscle	W	0.002	Leung (1973)

Harbor seal Phoca vitulina	Great Britain	blood	W	0.02±0.01	Hamilton (1976)
" "	"	spleen	W	<0.05	"
" "	"	heart	W	<0.01	"
" "	"	muscle	W	0.03±0.02	"
" "	"	kidney	W	0.03±0.01	"
" "	"	liver	W	0.02±0.005	"
Racoon Procyon lotor	United States	kidney	W	(0.10-0.12)	Schroeder et al. (1967)
" "	"	liver	W	(0.06-0.28)	"
" "	"	heart	W	(0.13-0.29)	"
" "	"	lung	W	0.16	"
" "	"	spleen	W	(0.09-0.26)	"
" "	"	fat	W	(0.22-0.65)	"
Laboratory rat Rattus rattus	"	red blood cells	W	(0.03-0.04)	"
Gray squirrel Sciurus carolinensis	"	liver	W	0.55	"
Pig Sus scrofa		Co highest in liver, heart, kidney and pancreas			Braude et al. (1949)
" "	United States	muscle	W	(0.11-0.23)	Schroeder et al.(1967)
" "	"	liver	W	0.41	"
" "	"	fat	W	0.04	"
" "	East Asia	muscle	W	0.011	Leung (1973)

Red fox *Vulpes vulpes*	United States	liver	W	0.36	Schroeder et al. (1967)
"Bat"	"	"	W	0.76	"
"	"	heart	W	<2.98	"
"	"	whole	W	0.37	"
"	"	foot	W	<1.26	"
"	"	wing & leg	W	1.48	"

COBALT IN BIRDS (1)

Species	Locality	Tissue	Analysis (2) PPM	Authority
Mallard *Anas platyrhynchos*	Canada	feather	D <0.05	Kelsall (1970)
Black duck *Anas rubripes*	"	"	D <0.05	"
Noddy tern *Anous stolidus*	Eniwetok	not in tissues	excreted $Co^{57,58,59}$	Lowman (1963)
Lesser scoup duck *Aythya affinis*	Canada	feather	D <0.05	Kelsall (1970)
White-fronted goose *Anser albifrons*	"	"	D <0.05	"
Ruffed grouse *Bonasa umbellus*	United States	liver	W 0.20	Schroeder et al. (1967)
Swiflet *Collacalia inexpectata*	East Asia	dried nest	W 0.051	Leung (1973)
Fairy tern *Gyris alba*	Eniwetok	not in tissues	excreted $Co^{57,58,59}$	Lowman (1963)

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Chicken *Gallus domesticus*		egg white		0.034	Skoropostizhnaya (1957)
" "		egg yolk		0.068	"
" "	United States	"	W	0.12	Schroeder et al. (1967)
" "	"	egg white	W	0.06	"
" "	"	whole egg	W	0.10	"
" "	"	wing	W	0.29	"
" "	"	leg	W	0.21	"
" "	East Asia	whole	W	0.102	Leung (1973)
" "	"	yolk	W	0.225	"
" "	"	white	W	0.004	"
" "	"	chick	W	0.084	"

COBALT IN MARINE FISH (1)

Species	Locality	Tissue		Analysis (2) PPM	Authority
Sablefish, black cod Anoplopoma fimbria	Oregon	liver	W	(0.0-0.37) pCi/g Co^{60}	Seymour & Lewis (1964)
" "	"	muscle		(0.0-0.09) pCi/g Co^{60}	"
White croaker Argyrosomus argentatus	Japan	skin	W	(0.020-0.048)	Ichikawa & Ohno (1974)
" "	"	muscle	W	(0.0025-0.0085)	"
" "	"	viscera	W	(0.024-0.032)	"
" "	"	bone	W	(0.0087-0.037)	"
Silverfish Argyrozona argyrozona	S. Africa	muscle	W	0.0026	Van As et al. (1975)
Atractoscion aequidens	"	"	W	0.0041	"
Ghost shark Callorhincus callorhincus	Chile	skin	W	0.028	Ichikawa & Ohno (1974)
" "	"	muscle	W	0.0015	"

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Porgy *Chrysophrys major*	Japan	skin	W	0.033	Ichibawa & Ohno (1974)
" "	"	muscle	W	0.0058	"
Pacific saury *Cololabis saira*	East Asia	"	W	0.125	Leung (1973)
Dolphin *Corphaena hippura*	Japan	skin	W	0.020	Ichikawa & Ohno (1974)
" "	"	liver	W	0.0003	"
Wrasse *Ctenolabrus rupestris*	Sweden	less viscera	D	3.8	Noddack & Noddack (1940)
Yellow porgy *Dentex macrocanus*	South America	muscle	W	0.0034	Ichikawa & Ohno (1974)
" "	"	viscera	W	0.059	"
Surf perch *Ditrema temmincki*	Japan	muscle	W	0.018	"
" "	"	viscera	W	0.107	"
Big-eye sardine *Etrumeus micropus*	"	muscle	W	(0.013-0.014)	"
" "	"	bone	W	0.012	"
Atlantic cod *Gadus morhua*		adult	A	2.7	Malyuga (1946)
" "		"	D	0.33	"
" "		"	W	0.065	"
" "		immature	A	2.8	"
" "		"	D	0.42	"
" "		"	W	0.076	"

Tiger shark *Galeocerdo cuvieri*	Hawaii	liver	W	0.0 pCi/kg Co^{60}	Folsom & Young (1965)
Rex sole *Glyptocephalus zachirus*	Oregon	muscle	W	(0.0-0.14) pCi/g Co^{60}	Seymour & Lewis (1964)
Shad *Harengula zunasi*	Japan	"	W	0.011	Ichikawa & Ohno (1974)
" "	"	bone	W	0.057	"
Kabeljon *Johnius hololepidotus*	S. Africa	muscle	W	0.0022 ±SD 0.0004	Van As et al. (1975)
Seabass *Lateolabrax japonicus*	East Asia	"	W	0.046	Leung (1973)
Flounder *Limanda herzensteini*	Japan	skin	W	(0.012-0.089)	Ichikawa & Ohno (1974)
" "	"	muscle	W	(0.0027-0.011)	"
Lithognathus lithognathus	S. Africa	"	W	0.0031	Van As et al. (1975)
Angler *Lophius piscatorius*	"	"	W	0.0062	"
Blue marlin *Makaira nigricans*	Puerto Rico	liver	W	0.5 dpm/g Co^{57}	Lowman et al. (1966)
" "	" "	"	W	0.1 dpm/g Co^{60}	"
Haddock *Melanogrammus aeglefinus* (=Gadus aeglefinus)			A	4.2	Malyuga (1946)
" "			D	0.68	"
" "			W	0.01	"
Silver hake *Merluccius bilinearis*			A	10.0	Vinogradov (1953)
" "			D	1.4	"
" "			W	0.28	"

Hake, stockfish *Merluccius capensis*	S. Africa	muscle	W	0.0037 ±SD 0.0011	Van As et al. (1975)
Hake *Merluccius gayi*	South America	"	W	0.0026	Ishikawa & Ohno (1974)
" "	"	viscera	W	0.035	"
Dover sole *Microstomus pacificus*	Oregon	muscle	W	(0.0-0.09) pCi/g Co^{60}	Seymour & Lewis (1964)
" "	"	liver	W	(0.0-0.09) pCi/g Co^{60}	"
" "	Los Angeles (sewer outfalls)	"	W	(0.037-0.061)	DeGoeij et al. (1974)
" "	S. California (control)	muscle	W	(0.1-0.5)	Fowler et al. (1975)
" "	" (contam. area)	"	W	(0.1-0.2)	"
Striped bass *Morone saxatilis*	Long Island		W	0.109	Zawacki & Briggs (1976)
" "	"		D	1.31	"
Goatfish *Mulloidichtys samoensis*	Guam		W	20 $\mu\mu$c/g Co^{57}	Seymour (1963)
" "	"		W	2 $\mu\mu$c/g Co^{60}	"
File fish *Navodon modestus*	Japan	skin	W	(0.028-0.066)	Ichikawa & Ohno (1974)
" "	"	muscle	W	(0.0027-0.0036)	"
Atlantic thread herring *Opisthonema oglinum*	Puerto Rico		A	(15.0-50.0) 31.0	Ting & Vega (1969)
Smelt *Osmerus eperlanus*			A	10.0	Malyuga (1946)
" "			D	1.4	"
" "			W	1.1	"

Hottentot Pachymetopon grande	S. Africa	muscle	W	0.0020	Van As et al. (1975)
Calico bass, sand bass Paralabrax clathratus	California	dorsal muscle	D	(1.4-2.2)	Stapleton (1968)
" "	"	ventral muscle	D	(1.2-4.3)	"
" "	"	gonad	D	(3.6-4.4)	"
" "	"	liver	D	(1.4-1.9)	"
" "	"	integument	D	(1.4-1.8)	"
" "	"	heart	D	(1.2-1.7)	"
" "	"	eyeball	D	(5.1-5.2)	"
Grunt Parapristipoma trilineatum	Japan	skin	W	0.064	Ichikawa & Ohno (1974)
" "	"	bone	W	0.040	"
English sole Parophrys vetulus	Oregon	liver	W	0.0 pCi/g Co^{60}	Seymour & Lewis (1964)
Green cod Pollachius virens			A	2.4	Malyuga (1946)
" "			D	0.4	"
" "			W	0.07	"
Bluefish Pomatomus saltatrix	Long Island		W	0.995	Zawacki & Briggs (1976)
" "	"		D	2.11	"
Flyingfish Prognichthys agoo	Japan	skin	W	0.038	Ichikawa & Ohno (1974)
" "	"	muscle	W	0.0018	"
Pilchard Sardinops melanostica	East Asia	"	W	0.021	Leung (1973)
Sardine, pilchard Sardinops ocellata	S. Africa	"	W	0.033	Van As et al. (1975)

False whiting Sciaena deliciosa	Peru	muscle	W	0.0041	Ichikawa & Ohno (1974)
" "	"	viscera	W	0.284	"
Mackerel Scomber japonicus	Japan	muscle	W	(0.0025-0.0099)	"
" "	"	liver	W	(0.051-0.071)	"
Chub mackerel Scomber japonicus	S. Africa	muscle	W	0.020 ±SD 0.017	Van As et al. (1975)
Scombrops dubius	"	"	W	0.0034	"
Windowpane flounder Scophthalmus aquosus	Long Island		W	0.821	Zawacki & Briggs (1976)
" "	"		D	3.28	"
Pacific ocean perch Sebastes alutus (=Sebastodes alutus)	Oregon	muscle	W	(0.0-0.09) pCi/g Co^{60}	Seymour & Lewis (1964)
Stingfish Sebastes inermis	Japan	"	W	0.0037	Ichikawa & Ohno (1974)
" "	"	skin	W	0.013	"
Rock fish Sebastes spp.	Oregon	liver	W	(0.0-0.37) pCi/g Co^{60}	Seymour & Lewis (1964)
Yellowtail Seriola pappei	S. Africa	muscle	W	0.008 ±SD 0.0049	Van As et al. (1975)
Yellowtail Seriola quinqueradiata	Japan	"	W	0.0055	Ichikawa & Ohno (1974)
" "	"	viscera	W	0.015	"
" "	East Asia	muscle	W	0.022	Leung (1973)
Sand smelt Sillago sihama	Japan	viscera	W	(0.054-0.202)	Ichikawa & Ohno (1974)
" "	"	muscle	W	(0.0022-0.0042)	"

Spiny dog shark *Squalus acanthius*	Sweden	less viscera	D	0.1	Noddack & Noddack (1940)
File fish *Stephanolepis cirrhifer*	Japan	muscle	W	0.004	Ichikawa & Ohno (1974)
" "	"	viscera	W	0.024	"
Sole *Synaptura marginata*	S. Africa	muscle	W	0.0031 ±0.0004	Van As et al. (1975)
Albacore *Thunnus alalunga*	N. Pacific	liver	W	160.0±SE 20.0 pCi/kg Co^{60}	Folsom & Young (1965)
" "	S. Pacific	"	W	30.0±5.0 pCi/kg Co^{60}	"
" "		gall bladder	A	30.0	Goldberg (1962)
Horse mackerel *Trachurus japonicus*	Japan	skin	W	0.131	Ichikawa & Ohno (1974)
" "	"	muscle	W	0.0097	"
" "	East Asia	"	W	0.042	Leung (1973)
Horse mackerel *Trachurus trachurus*	S. Africa	"	W	0.0081	Van As et al. (1975)
Sea robin *Triglia capensis*	"	"	W	0.011	"
Swordfish *Xiphias gladius*	East Asia	"	W	0.009	Leung (1973)
Kingklip *Xiphiurus capensis*	S. Africa	"	W	0.0032 ±SD 0.0013	Van As et al. (1975)
"Cod"	United States	"	W	1.21	Schroeder et al. (1967)
"Smelt"	"	"	W	7.21	"

COBALT IN FRESHWATER FISH (1)

Species	Locality	Tissue	Analysis PPM (2)	Authority
Sturgeon *Acipenser sp.*	New York	muscle, bone & skin	W 0.13	Tong et al. (1972)
Bleak *Alburnus alborella*	Italy	muscle	A 1.2±SE 0.23	Merlini et al. (1971)
" "	"	bone	A 0.07±SE 0.01	"
" "	"	scale	A 0.0	"
Alewife *Alosa pseudoharengus*	Lake Michigan	whole	W 0.029±0.014	Lucas et al. (1970)
River carpsucker *Carpiodes cyprinus*	Illinois	muscle	W (0.04-0.12) 0.087	Mathis & Cummings (1973)
White sucker *Catastomus commersoni*	New York	muscle, bone & skin	W 0.34	Tong et al. (1972)
Lake herring *Coregonus artedii*	Lake Superior	liver	W 0.020	Lucas et al. (1970)

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Lake whitefish *Coregonus clupeaformis*	Lake Superior	liver	W	0.010	Lucas et al. (1970)
" "	Lake Michigan	"	W	0.036± 0.005	"
Bloater *Coregonus hoyi*	Lake Superior	"	W	0.012±0.001	"
" "	Lake Michigan	"	W	0.040±0.006	"
Whitefish *Coregonus macrophthalmus*	Italy	muscle	A	0.64±SE 0.13	Merlini et al. (1971)
" "	"	bone	A	0.14±SE 0.04	"
" "	"	scale	A	0.24±SE 0.09	"
Carp *Cyprinus carpio*	Austria	kidney	D	0.032	Rehwolt et al. (1976)
" "	"	liver	D	0.076	"
" "	"	muscle	D	0.004	"
" "	"	bone	D	0.067	"
" "	New York	" muscle & skin	W	0.03	Tong et al. (1972)
" "	Illinois	muscle	W	(0.03-0.10) 0.068	Mathis & Cummings (1973)
Gizzard shad *Dorosoma cepedianum*	"	"	W	(0.10-0.25) 0.16	"
Northern pike *Esox lucius*	"	"	W	(0.03-0.11) 0.07	"
" "	New York	muscle, bone & skin	W	(0.16-4.7)	"
Muskellunge *Esox masquinongy*	"	"	W	(0.33-1.7)	Tong et al. (1972)
Chain pickerel *Esox niger*	"	"	W	(0.07-0.32)	"

Bigmouth buffalo *Ictiobius cyprinellus*	Illinois	muscle	W	(0.06-0.12) 0.081	Mathis & Cummings (1973)
Shortnose gar *Lepisosteus platostomus*	"	"	W	(0.11-0.18) 0.15	"
Blue gill *Lepomis macrochirus*	United States		W	3.72	Schroeder et al. (1967)
Smallmouth bass *Micropterus dolomieui*	Illinois	muscle	W	(0.14-0.16) 0.15	Mathis & Cummings (1973)
" "	New York	muscle, bone & skin	W	(0.16-1.6)	Tong et al. (1972)
Largemouth bass *Micropterus salmoides*	Illinois	muscle	W	(0.06-0.18) 0.09	Mathis & Cummings (1973)
" "	New York	muscle, bone & skin	W	(0.15-0.29)	Tong et al. (1972)
White bass *Morone chrysops* (=Roccus chrysops)	Lake Erie	liver	W	0.043±0.002	Lucas et al. (1970)
Striped bass *Morone saxatilis*	New York	muscle, bone & skin	W	0.13	Tong et al. (1972)
Shorthead redhorse *Moxostoma macrolepidotum*	Illinois	muscle	W	(0.05-0.11) 0.083	Mathis & Cummings (1973)
Spottail shiner *Notropis hudsonius*	Lake Erie	whole	W	0.025±0.004	Lucas et al. (1970)
" "	Lake Michigan	"	W	0.042±0.015	"

American smelt *Osmerus mordax*	Lake Michigan	liver	W	13.0±4.0	Lucas et al. (1970)
Yellow perch *Perca flavescens*	Lake Erie	"	W	0.12±0.060	"
Trout perch *Percopsis omiscomaycus*	Lake Michigan	whole	W	0.024±0.002	"
" "	Lake Superior	"	W	0.022±0.005	"
Black crappie *Pomoxis nigromaculatus*	New York	muscle, bone & skin	W	0.08	Tong et al. (1972)
Round whitefish *Prosopium cylindraceum*	Lake Superior	liver	W	0.047±0.008	Lucas et al. (1970)
Lake trout *Salvelinus namaycush*	"	"	W	0.031±0.003	"
" "	Lake Michigan	"	W	0.036±0.004	"
" "	New York	muscle, bone & skin	W	(0.06-0.42)	Tong et al. (1972)
Rudd *Scardinius erythrophthalmus*	N. Italy	muscle	A	0.48±SE 0.09	Merlini et al. (1971)
" "	"	bone	A	0.08±SE 0.01	"
" "	"	scale	A	0.18±SE 0.03	"
Walleye *Stizostedion vitreum*	Lake Erie	liver	W	0.045±0.025	Lucas et al. (1970)
" "	New York	muscle, bone & skin	W	(0.09-4.7)	Tong et al. (1972)

COBALT IN MOLLUSCS(1)

Species	Locality	Tissue	Analysis (2) PPM	Authority
Copepod Acartia clausi	Greece	whole	D (0.19-1.3)	Zafiropoulos & Grimanis (1977)
Freshwater clam Amblema plicata	Illinois	soft parts	W (0.4-1.2)0.7	Mathis & Cummings (1973)
Arch shell Anadara granosa	Bombay	"	W 0.11	Bhatt et al. (1968)
Sea hare Aplysia sp.		liver	D trace	Fox & Ramage (1931)
Gastropod Archidoris tuberculata	Great Britain	"	D (0.31-0.34)	"
Pteropod Cavolinia quadridentata	Gulf of Aquaba	whole	(0.064-0.199)	Turekion et al. (1973)
Pteropod Cavolinia unicata	"	"	0.084±0.003	"

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Cockle Cerastoderma edule (=Cardium edule)			D	2.1	Vinogradov (1953)
" "			W	0.43	"
Scallop Chlamys opercularis	Great Britain	soft parts	D	0.33	Bryan (1973)
Black mussel Choromytilus meridionalis	S. Africa	"	D	(0.9-3.0)	Watling & Watling (1976b)
" "	"	"	W	0.038±SD 0.006	Van As et al. (1975)
Pteropod Clio pyramidata	Gulf of Aquaba	whole		(0.078-0.176)	Turekian et al. (1973)
Pteropod Clione limacina	N.W. Atlantic	"	A	30.0	Nicholls et al. (1959)
Pacific oyster Crassostrea gigas	Oregon	soft parts	W	(0.0-0.7) pCi/g Co^{60}	Seymour & Lewis (1964)
" "	Washington	"	W	(0.10-0.20)	Pringle et al. (1968)
" " ?	Great Britain	"	D	(2.2-3.5)	Boyden & Romeril (1974)
Oyster Crassostrea gryphoides	Bombay	"	W	0.06	Bhatt et al. (1968)
Atlantic oyster Crassostrea virginica			W	<0.12	Shuster & Pringle (1969)
" "	Texas	shell	D	<1.0	Smith & Wright (1962)
" "	Atlantic Coast United States	soft parts	W	(0.06-0.20) 0.10	Pringle et al. (1968)
" "	"	"	W	(0.14-0.18)	Schroeder et al. (1967)

Pteropod *Cresius acicula*	Gulf of Aquaba	whole		(0.057-0.149)	Turekian et al. (1973)
White mussel *Donax sera*	S. Africa	soft parts	W	0.038±SD 0.024	Van As et al. (1975)
Freshwater clam *Fusconaia flava*	Illinois	"	W	(0.5-1.3) 0.8	Mathis & Cummings (1973)
Glycimerus glycimerus	Irish Sea	"	D	0.9	Segar et al. (1971)
Abalone *Haliotis gigantea*	East Asia	muscle	W	0.009	Leung (1973)
Abalone *Haliotus midae*	S. Africa	soft parts	W	0.025± SD 0.007	Van As et al. (1975)
Abalone *Haliotis sp.*		podium	D	0.0	Vinogradov (1953)
Sponge *Ircinia strobilina*	Puerto Rico		A	0.0 dis/mg Co^{60}	Lowman et al. (1967)
Squid *Illex illecebrosus*	Atlantic Grand Bank	liver	W	0.0 pCi/kg Co^{60}	Folsom & Young (1965)
Octopus *Japatella heathi*	Oregon		W	0.07 pCi/kg Co^{60}	Seymour & Lewis (1964)
Clam *Katelysia marmorata*	Bombay	soft parts	W	(0.01-0.24) 0.10	Bhatt et al. (1968)
Gastropod *Lambis lambis*	Guam		W	(59.0-231.0) μμc/g Co^{57}	Seymour (1963)
" "	"		W	(2.0-19.0) μμc/g Co^{60}	"

Pteropod *Limacina retroversa*	N.W. Atlantic	whole	A	20.0	Nicholls et al. (1975)
" "	South Atlantic	"		(1.01-1.04)	Turekian et al. (1973)
Squid *Loligo opalescens*	California	liver	W	0.0 pCi/kg Co^{60}	Folsom & Young (1965)
Quahog, hard shell clam *Mercenaria mercenaria*	Atlantic Coast United States	soft parts	W	(0.10-0.20) 0.20	Pringle et al. (1968)
" "	Great Britain	"	D	4.3	Segar et al. (1971)
Clam *Meretrix meretrix*	Bombay	"	W	(0.09-0.52) 0.25	Bhatt et al. (1968)
Clam *Meretrix sp.*	East Asia	"	W	0.409	Leung (1973)
Horse mussel *Modiolus agripeta*	Okinawa	"	W	40.0±SE 4.0 pCi/kg Co^{60}	Folsom & Young (1965)
Horse mussel *Modiolus modiolus*	Irish Sea	"	D	5.5	Segar et al. (1971)
Squid *Moroteuthis robusta*	Oregon		W	(0.0-1.0) pCi/g Co^{60}	Seymour & Lewis (1964)
Softshell clam *Mya arenaria*	"	"	W	(0.0-0.59) pCi/g Co^{60}	"
" "	Atlantic Coast United States	"	W	(0.10-0.20) 0.10	Pringle et al. (1968)
Intertidal mussel *Mytilus californianus*	S. California	"	W	10.0±SE 0.1 pCi/kg Co^{60}	Folsom & Young (1965)

Common mussel *Mytilus edulis*			D	1.7	Webb (1937)
" "			W	0.33	"
" "	Oregon		W	(0.0-0.34) pCi/g Co^{60}	Seymour & Lewis (1964)
" "	Mediterranean	soft parts	D	(0.4-5.9)	Fowler & Oregioni (1976)
" "	Yugoslavia	"	D	12.0	Lulic & Strohal (1974)
" "	Great Britain	"	D	1.6	Segar et al. (1971)
" "	Belgium	"	D	(1.21-2.23) 1.74	Bertini & Goldberg (1972)
" "	Netherlands	"	D	2.27	"
Mussel *Mytilus galloprovincialis*	Mediterranean	"	D	(0.5-7.4)	Fowler & Oregione (1976)
Mussel *Mytilus viridis*	Bombay	"	W	0.0	Bhatt et al. (1968)
Mud snail *Nassarius obsoletus*	Oregon	whole	W	(0.0-0.10) pCi/g Co^{60}	Seymour & Lewis (1964)
Octopus *Octopus vulgaris*	"	edible parts	W	0.106	"
Squid *Ommastrephes illecebrosa*	N.E. United States		A	3.0	Nicholls et al. (1959)
Scallop *Pecten caurinus* (=Patinopecten caurinus)	Oregon		W	(0.0-0.04) pCi/g Co^{60}	Seymour & Lewis (1964)

Scallop Pecten islandicus			W	0.015	Malyuga (1946)
" "			D	0.068	"
Scallop Pecten maximus	Irish Sea	soft parts	D	8.5	Segar et al. (1971)
" "	Great Britain	"	D	0.25	Bryan (1973)
Scallop Pecten yessoensis	East Asia	"	W	0.372	Leung (1973)
Pen shell Pinna sp.		kidney	D	60.0	Fox & Ramage (1931)
Sea scallop Placopecten magellanicus	Delaware (dump site)	whole	D	(0.29-1.02) 0.56	Pesch et al. (1977)
Pleurobranchus plumula				250.0	Vinogradov (1953)
Freshwater clam Quadrula quadrula	Illinois	soft parts	W	(0.6-1.6) 1.2	Mathis & Cummings (1973)
Cuttlefish Sepia spp.	East Asia	edible parts	W	0.013	Leung (1973)
Pacific razor clam Siliqua patula	Oregon	soft parts	W	(0.0-0.71) pCi/g Co^{60}	Seymour & Lewis (1964)
Squid Stenoteuthis bartrami	N.E. Pacific	liver	W	(1,100.0-3,800.0) pCi/kg Co^{60}	Folsom & Young (1965)
" "	Hokkaido coast		W	0.0 pCi/kg Co^{60}	"
Pteropod Styliola turbula	South Atlantic	whole		(0.409-0.571)	Turekian et al. (1973)

Clam *Sunetta donacina*	Bombay	soft parts	W	0.06	Bhatt et al. (1968)
Squid *Symplectoteuthis oualaniensis*	Okinawa	liver	W	600.0 pCi/kg Co^{60}	Folsom & Young (1965)
Short-necked clam *Tapes philippinarum*	Japan	soft parts	W	(0.110-0.22)	Ichikawa & Ohno (1974)
" "	"	foot & mantle	W	(0.110-0.540)	"
" "	"	gill & viscera	W	(0.096-0.180)	"
Tridacna clam *Tridacna sp.*	Guam	kidney	W	2340 ± 30.0 μμc/g Co^{57}	Seymour (1963)
" "	Palau	"	W	(16.0-294.0) μμc/g Co^{60}	"
"Scallops"	E. United States		W	2.25	Schroeder et al. (1967)
"Clams"	"	soft parts	W	0.33	"
"Molluscs"	Puerto Rico	"	A	±50.0	Lowman et al. (1966)

COBALT IN ARTHROPODS(1)

Species	Locality	Tissue	Analysis(2) PPM	Authority
CRUSTACEA				
Copepod *Calanus finmarchius*	N.E. United States	whole	A 3.0	Nicholls et al. (1959)
Crayfish *Cambarus longulus longirostris*	Tennessee		<5.0	Wiser & Nelson (1964)
" " "	"	Co^{60} was concentrated in gut, hepatopancreas and integument, relatively little in blood, muscle, and gut		"
Copepod *Centropagus hematus* and *typicus*		whole	A 4.0	Nicholls et al. (1939)
Euphausid *Euphausia krohni*	United States	"	A 5.0	Nicholls et al. (1959)
Lobster *Homarus americanus*	E. United States	muscle	W (0.07-<0.16)	Schroeder et al. (1967)

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Hyas araneus			A	1.4	Malyuga (1939)
" "			D	0.77	"
" "			W	0.15	"
Rock lobster *Jasus lalandii*	S. Africa	muscle	W	0.0039± SD 0.0015	Van As et al. (1975)
Decapod *Leander adspersus*	Russia			0.0	Petkevich & Stepanyuk (1970)
Gooseneck barnacle *Lepas anatifera*	N.E. Pacific	whole	W	40.0±SE 4.0 pCi/kg Co^{60}	Folsom & Young (1965)
Gooseneck barnacle *Lepas anserifera*	N. Borneo	"	W	10.0±SE 4.0 pCi/kg Co^{60}	"
Isopod *Ligia pallasii*	Oregon		W	(0.0-0.65) pCi/g Co^{60}	Seymour & Lewis (1964)
Barnacle *Mitella polymerus*	"		W	0.0 pCi/g Co^{60}	"
Sea crab *Neptunus spp.*	East Asia	muscle	W	0.007	Leung (1973)
Spiny lobster *Panulirus sp.*			W	200.0	Vinogradov (1953)
Shrimp *Peneus orientalis*	Japan	soft parts	W	(0.014-0.020)	Ichikawa & Ohno (1974)
" "	"	carapace	W	(0.030-0.036)	"
Shrimp *Peneus spp.*	East Asia	muscle	W	0.034	Leung (1973)
Copepod *Pleuromamma xiphias*	Puerto Rico	whole	A	(20.0-50.0) 37.0	Martin (1970)
" "	"	"	D	12.3	"

Kelp crab *Pugettia producta*	California	feces	A	(ND-0.9)	Boothe & Knauer (1972)
Copepod *Undinula vulgaris*	Puerto Rico	whole	A	(25.0-60.0) 44.0	Martin (1970)
" "	"	"	D	14.3	"
"Shrimp"	E. United States	muscle	W	0.12	Schroeder et al. (1967)
"	"	whole	W	1.81	"
	Puerto Rico		A	±20.0	Lowman et al. (1966)
INSECTA					
Hyalophora cecropia (=Cecropia)	New England	pupa	W	0.21	Schroeder et al. (1967)
" "	"	cocoon	W	2.55	"
Anthaeria polyphemus (=Polyphemus)	"	pupa	W	0.36	"
Praying mantis *Paratenodora sinensis*		adult	W	(1.32-2.52)	"

COBALT IN LOWER ANIMALS(1)

Species	Locality	Tissue	Analysis PPM	Authority
CTENOPHORA				
Comb jelly *Beröe cucumis*	N.E. United States	whole	A <1.0	Nicholls et al. (1959)
CHAETOGNATHA				
Arrow worm *Sagitta elegans*	"	"	A 110.0	"
PORIFERA				
Sponge *Halichondra sp.*	Sweden		D 0.05	Noddack & Noddack (1940)
Sponge *Spheciospongia vesparia*	Puerto Rico		A (2.8-13.0) dis./mg Co^{60}	Lowman et al. (1967)
ANNELIDA				
Polychaete *Aphrodita aculeata*			D 25.0	Vinogradov (1953)

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Sand worm Arenicola marina	Gulf of Kola		A	9.5	Malyuga (1946)
" "	"		D	5.5	"
" "	"		W	2.0	"
Tubificid worm Limnodrilus hoffmeisteri	Illinois		W	(0.2-2.5)1.6	Mathis & Cummings (1973)
Myxicola infundibulum			D	20.0	Vinogradov (1953)
Tubificid worm Tubifex tubifex	Illinois		W	(0.2-2.5)1.6	Mathis & Cummings (1973)
COELENTERATA					
Coral Anomacora fecunda	W. Atlantic Ocean		D	1.5	Livingston & Thompson (1971)
Coral Bathycyanthus maculatus	"		D	1.3	"
Coral Caryophyllia clavus	"		D	7.0	"
Coral Caryophyllia communis	"		D	<2.0	"
Coral Cladocera patriarca	"		D	<2.0	"
Jellyfish Cynaea capillata	NE United States	whole	A	3.0	Nicholls et al. (1959)
" "	"		D	1.9	"
" "	Sweden	"	D	7.1	Noddack & Noddack (1940)
Coral Dendrophyllia sp.	W. Atlantic Ocean		D	2.0	Livingston & Thompson (1971)

Coral *Desmophyllum cristogalli*	W. Atlantic Ocean		D	(1.0-16.0)	Livingston & Thompson (1971)
Coral *Madracis asperula*	"		D	3.0	"
Coral *Madracis mirabilis*	"		D	(0.061-0.17)	"
Coral *Madracis pharensis*	"		D	0.077	"
Coral *Meandrina areolata*	"		D	0.04	"
Coral *Meandrina braziliensis*	"		D	(0.058-0.067)	"
Sea anemone *Metridium dianthus*	Sweden		D	1.7	Noddack & Noddack (1940)
Coral *Montastrea annularis*	W. Atlantic Ocean		D	(0.064-0.12)	Livingston & Thompson (1971)
Coral *Phyllangia americana*	"		D	2.0	"
Coral *Porites porites*	W. Atlantic Ocean		D	(<2.0-2.0)	"
Coral *Scolmia cubensis*	"		D	(0.058-0.47)	"
Coral *Solenosmilia variabilis*	"		D	(<0.2-105.0)	"
Coral *Trochocyanthus sp.*	"		D	14.0	"
ECHINODERMATA					
Sea urchin *Arbacia lixula*	Greece	whole	D	0.32	Papadopoulou et al. (1976)

Sea star *Asterias rubens*	Sweden	without viscera	D	0.9	Noddack & Noddack (1940)
" "			D	3.0	Malyuga (1941)
Sea urchin *Brissopsis lyrifera*	"	"	D	2.0	Noddack & Noddack (1940)
Sea cucumber *Cucumaria frondosa*			D	0.67	Malyuga (1941)
Sea urchin *Echinaster sepositus*	Greece	whole	D	0.38	Papadopoulou et al. (1976)
Sea cucumber *Holothuria tubulosa*	"	"	D	0.11	"
Starfish *Marthasterias glacialis*	"	"	D	0.090	"
Serpent star *Ophioderma longicauda*	"	"	D	0.20	"
Sea urchin *Paracentrotus lividus*	"	"	D	0.28	"
Sea urchin *Parechinus sp.*	S. Africa		W	0.006	Van As et al. (1975)
Sea urchin *Sphaerechinus granularis*	Greece	whole	D	0.66	Papadopoulou et al. (1976)
Sea cucumber *Stichopus tremulus*	Sweden	without viscera	D	1.2	Noddack & Noddack (1940)
Sea urchin *Stronglylocentrus pulcherrimus*	Japan	ovary	W	(0.071-0.084)	Ishikawa & Ohno (1974)
"Sea cucumber"	"	whole	W	(0.0082-0.019)	"
Starfish	Puerto Rico		A	>30.0	Lowman et al. (1966)

TUNICATA

Tunicate *Ciona intestinalis*	Sweden	whole	D	2.3	Noddack & Noddack (1940)
" "	Greece	"	W	0.022	Papadopoulou & Kanias (1977)
" "	"	"	D	0.52	"
" "	"	tunic	W	0.017	"
" "	"	"	D	0.44	"
" "	"	other than tunic	W	0.050	"
" "	"	"	D	1.4	"
Tunicate *Microcosmus sulcatus*	"	whole	D	0.31	"
" "	"	"	D	1.9	"
Red bait *Pyura microcosmus*	S. Africa	"	W	0.075	Van As et al. (1975)
Tunicate *Salpa fusiformis*	NE United States	"	A	<1.0	Nicholls et al. (1959)

COBALT IN HIGHER PLANTS (1)

Species	Locality	Tissue	Analysis (2) PPM	Authority
Sugar maple *Acer saccharum*	New England		W (0.07-1.14)	Schroeder et al. (1967)
Maple *Acer sp.*	Canada	bough	D 0.08	Warren & Delavault (1957)
Balsam fir *Abies balsamifera*	"	"	D (0.1-0.6)	"
Quack grass *Agropyron repens*	United States		D 0.09	Beeson et al. (1947)
Red top grass *Agrostis alba*	"		D 0.08	"
Onion *Allium cepa*		bulb	0.13	Bertrand & Mokragnatz (1930)
" "	East Asia	"	W 0.13	Leung (1973)
" "	New England	"	W (0.06-0.18)	Schroeder et al. (1967)

(1) Blank spaces indicate information not available or not applicable. ? indicates questionable data.

(2) W, D or A indicates on a Wet, Dry or Ashed basis. A single number indicates a single determination or mean. (x-y) indicates range of values, followed by the mean. ± Standard deviation (SD), standard error (SE), median, and geometric mean are indicated as reported. pCi/g = picocuries per gram.

Green onion Allium porrum	Russia	bulb		0.26	Skoropostizhnaya (1957)
" "	East Asia	"	W	0.001	Leung (1973)
Garlic Allium sativum	"	"	W	0.009	"
" "	New England	"	W	0.32	Schroeder et al. (1967)
Alder Alnus rugosa (?)	Canada	bough	D	(0.06-0.25)	Warren & Delavault (1957)
Pineapple Aranas comosus	East Asia	fruit	W	0.0016	Leung (1973)
Custard apple Anona reticulata	"	"	W	0.002	"
Peanut Arachis hypogaea	United States	hay		0.08	Mitchell (1951)
" "	East Asia	nut	W	0.375	Leung (1973)
" "	United States	"	W	0.37	Schroeder et al. (1967)
" "	Lower Dahomey	"	D	0.60	Cresta et al. (1975)
Big sagebrush Artemisia tridentata	Nevada	stem	D	(0.5-2.3)	Wallace & Romney (1972)
" "	"	leaf	D	(0.5-2.6)	"
Jackfruit Artocarpus heterophyllus		seed	W	0.007	Leung (1973)
Athyrium augustum	New England		W	0.24	Schroeder et al. (1967)
Salt bush Atriplex canescens	Nevada	leaf	D	(1.0-1.7)	Wallace & Romney (1972)

Salt bush *Atriplex confertifolia*	Nevada (experimental)	leaf	D	(0.1-0.6)	Wallace & Romney (1972)
" "	" "	stem	D	(0.1-1.6)	"
" "	" "	root	D	(1.0-5.0)	"
" "	"	leaf	D	(0.5-1.6)	"
Salt bush *Atriplex hymenelytra*	"	"	D	(1.0-1.2)	"
Oats *Avena sativa*		bran		0.01	Bertrand & Mokragnatz (1930)
" "		grain		trace	"
" "	Canada	hay		(0.02-0.7)	Bowstead et al. (1942)
" "	United States	whole		(0.03-0.23)	Mitchell (1951)
" "	Scotland		D	(0.003-0.03)	Burridge (1970)
" "	East Asia	grain	W	0.019	Leung (1973)
Bilimbi *Averrhoa bilimbi*	"	fruit	W	0.002	"
Carambola *Averrhoa carambola*	"	"	W	0.002	"
Bamboo *Bambusa spp.* and others	"	shoot	W	0.003	"
Barberry *Berberis vulgaris*	New England		W	(0.13-0.56)	Schroeder et al. (1967)
Swiss chard *Beta vulgaris cicla*	United States		D	0.09	Hurwitz & Beeson (1944)
" " "	Maryland (on sludge-amended soil)	leaf & stem	D	(1.5-3.1)	Furr et al. (1976)

Beet *Beta vulgaris*	United States	root	D	(0.05-0.09)	Hurwitz & Beeson (1944)
" "	"	top	D	(0.39-0.41)	"
Mangel *Beta vulgaris*	"	leaf	D	(0.16-0.54)	"
Bog birch *Betula glandulosa*	Alaska	"	D	0.51	Kubota et al. (1970)
" "	"	twig	D	0.42	"
Paper birch *Betula papyrifera*	"	leaf	D	0.40	"
" "	"	twig	D	0.30	"
Birch *Betula sp.*	Canada	bough	D	(0.03-0.25)	Warren & Delavault (1957)
Rape *Brassica napus*	Russia			(0.10-0.12)	Meleshko (1957)
Cabbage *Brassica oleracea* var. *capitata*	United States	head	D	0.07	Beeson (1941)
" " "	" Russia	"	D	(0.07-0.24)	Hurwitz & Beeson (1944) & Skoropostizhnaya (1957)
" " "	United States		W	0.55	Schroeder et al. (1967)
Turnip *Brassica rapa*	"	leaf	D	(0.03-1.07)	Hurwitz & Beeson (1944)
Brome grass *Bromus inermis* (?)	" Canada		D	(0.03-0.09)	Beeson et al. (1947) & Arthur et al. (1953)

Bluejoint grass *Calamagrostis canadensis*	Alaska		D	0.14	Kubota et al. (1970)
" "	Canada, NWT		D	(0.83-5.78)	O'Toole et al. (1971)
Pepper *Capsicum sativum*	East Asia	fruit	W	0.003	Leung (1973)
" "	New England	"	W	(0.04-0.20)	Schroeder et al. (1967)
Papaya *Carica papaya*	East Asia	"	W	0.004	Leung (1973)
" "	Virgin Islands	"	W	(0.05-0.10)	Schroeder et al. (1967)
Rabbitbrush *Chrysothamnus viscidflorus*	Nevada	leaf	D	0.5	Wallace & Romney (1972)
" "	"	stem	D	0.5	"
Water melon *Citrullus vulgaris*	Russia			0.18	Meleshko (1957)
" "	East Asia	fruit	W	0.001	Leung (1973)
Lime *Citrus aurantiifolia*			D	0.2	Bertrand & Mokragnatz (1930)
Pomelo *Citrus grandis*	East Asia	fruit	W	0.11	Leung (1973)
Orange, tangerine *Citrus reticulata*	"	"	W	0.003	"
Clethra barbinervis	Japan	leaf	A	(100 x other plants tested)	Yamagata & Murakami (1958)
" "	"	"	A	700	"
Sea grape *Cocoloba uvifera*	Virgin Islands	fruit	W	0.45	Schroeder et al. (1967)

Coconut *Cocos nucifera*	East Asia	kernel	W	0.039	Leung (1973)
" "	Virgin Islands	"	W	(0.04-0.24)	Schroeder et al. (1967)
Coffee *Coffea arabica*		bean		0.002	Bertrand & Mokragnatz (1930)
" "		"	D	0.10±SD 0.0078	Shah et al. (1971)
Black brush *Coleogyne ramosissima*	Nevada	leaf	D	(trace-2.6)	Wallace & Romney (1972)
" "	"	stem	D	(trace-4.9)	"
Sweetfern *Comptonia peregrina*	Canada Ontario Dist. from Ni smelter (mi):				Hutchinson & Whitby (1973)
" "	" " " 1.0		D	10.0	"
" "	" " " 1.4		D	12.0	"
" "	" " " 4.6		D	7.0	"
" "	" " " 6.5		D	7.0	"
" "	" " " 8.4		D	5.0	"
" "	" " " 18.0		D	5.0	"
" "	" " " 31.0		D	7.0	"
Rattlebox *Crotalaria cobalticola*	Katanga	(indicator of Co)			NASA (1968)
" "	"		A	17,700.0 (max.)	Duvigneaud (1959)
Bermuda grass *Cynodon dactylon*	United States		D	(0.04-0.15)	Arthur et al. (1953) Beeson et al. (1947)
Pumpkin *Cucurbita pepo*	East Asia	fruit	W	0.002	Leung (1973)

Dodder *Cuscuta nevadensis*	Nevada	whole	D 0.5	Wallace & Romney (1972)
Orchard grass *Dactylus glomeratus*	United States		D 0.08	Beeson et al. (1947)
Carrot *Daucus carota*		leaf	0.31	Bertrand & Mokragnatz (1930)
" "		root	0.02	"
" "	East Asia	"	W 0.002	Leung (1973)
" "	New England	"	W (0.04-0.16)	Schroeder et al. (1967)
Wavy hair grass *Deschampsia flexuosa*	Canada, Ontario Dist. from Ni smelter (mi):			Hutchinson & Whitby (1973)
" "	" " 1.0		D 32.5	"
" "	" " 4.6		D 12.0	"
" "	" " 6.5		D 5.5	"
" "	" " 8.4		D 8.0	"
" "	" " 12.0		D 5.5	"
" "	" " 31.0		D 5.5	"
Salt grass *Distichlis spicata*			(0.15-0.66)	Vinogradov (1954)
Yam *Dioscorea alata*	East Asia	root	W 0.03	Leung (1973)
" "	New England	"	W (0.06-0.08)	Schroeder et al. (1967)
Duriam *Durio zibethicus*	East Asia	fruit	W 0.004	Leung (1973)

Waterweed *Elodea sp.*	Italy	whole	A	18.0±SE 2.7	Merlini et al. (1971)
Millet *Eleusine coracana*	East Asia	grain	W	0.264	Leung (1973)
Mormon tea *Ephedra funerea*	Nevada	shoot	D	(trace-2.0)	Wallace & Romney (1972)
Mormon tea *Ephedra nevadensis*	"	"	D	(trace-1.0)	"
Mormon tea *Ephedra torreyana*	"	"	D	(2.0-5.0)	"
Mormon tea *Ephedra viridis*	"	"	D	(2.0-6.0)	"
Fireweed *Epilobium angustifolium*	Alaska	leaf & stem	D	0.14	Kubota et al. (1970)
Horsetail *Equisetum sp.*	"		D	1.22±SD 1.27	"
Centipede grass *Eremochloa ophiuroides*	United States			0.04	Mitchell (1951)
Cotton grass *Eriophorum sp.*	Alaska		D	0.15	Kubota et al. (1970)
Winterfat *Eurotia lanata*	Nevada	leaf	D	(trace-4.6)	Wallace & Romney (1972)
Buckwheat *Fagopyrum sagittatum*		grain		0.36	Bertrand & Mokragnatz (1930)
Beech *Fagus grandifolium*		bark		1.10	"
" "		wood		(0.05-0.09)	"
" "		leaf	D	0.35	"
" "	New England		W	0.16	Schroeder et al. (1967)

Fig *Ficus carica*				0.20	Bertrand & Mokragnatz (1930)
Strawberry, wild *Fragaria vesca* (?)	Russia			(0.10-0.12)	Meleshko (1957)
Burro bush *Franseria dumosa*	Nevada	leaf	D	(trace-2.7)	Wallace & Romney (1972)
" "	"	stem	D	(trace-1.3)	"
Soy bean *Glycine max*	United States	hay		0.05	Mitchell (1951)
" "	East Asia	seed	W	0.195	Leung (1973)
Spiny hop sage *Grayia spinosa*	Nevada	leaf	D	(1.0-2.1)	Wallace & Romney (1972)
Okra *Hibiscus esculentus*	East Asia	fruit	W	0.006	Leung (1973)
Johnson grass *Holcus halepensis*	United States			0.08	Mitchell (1951)
Barley *Hordeum vulgare*	"	grain	D	(0.0012-0.003)	Haller et al. (1969)
" "	East Asia	"	W	0.20	Leung (1973)
Sweet potato *Ipomoea batatas*	United States			(0.02-0.03)	Hurwitz & Beeson (1944)
" "	East Asia	root	W	0.215	Leung (1973)
Black walnut *Juglans nigra*		nut		0.05	Bertrand & Mokragnatz (1930)
Cedar *Juniperus communis*	Canada	bough	D	0.01	Warren & Delavault (1957)

Juniper *Juniperus osteosperma*	Nevada	leaf	D	0.5	Wallace & Romney (1972)
Cedar *Juniperus virginianum*	Missouri	twig & leaf	D	<0.6	Connor et al. (1970)
Krameria *Krameria parvifolia*	Nevada	leaf	D	trace	Wallace & Romney (1972)
" "	"	stem	D	(trace-1.4)	"
Lettuce *Lactuca sativa*		leaf	D	(0.05-0.23)	Bertrand & Mokragnatz (1930)
" "	East Asia	"	W	0.140	Leung (1973)
" "	New England	"	W	(0.10-0.14)	Schroeder et al. (1967)
Calabash *Lagenaria spp.*	East Asia	fruit	W	0.001	Leung (1973)
Langsat *Lansinum domesticum*	"	"	W	0.002	"
Creosote bush *Larrea divaricata*	Nevada	leaf	D	(trace-1.1)	Wallace & Romney (1972)
" "	" (experimental)	"	D	(1.0-1.1)	"
" "		stem	D	(trace-0.9)	"
Tamarack, larch *Larix laricina*	Canada	bough	D	(0.06-0.15)	Warren & Delavault (1957)
Labrador tea *Ledum groenlandicum*	"	"	D	(0.04-0.75)	"
Lentil *Lens lentil*	East Asia	seed	W	0.179	Leung (1973)
Lespedeza *Lespedeza cuneata*	United States			(0.03-0.73)	Mitchell (1951)

Lily *Lilium longiflorum*		leaf		0.016	Yamada (1958)
" "		petal		0.133	"
" "		pollen		0.07	"
" "		stigma		0.056	"
" "		style		1.182	"
Composite *Linosyris villosa*	Russia (indicates Ni-Co deposits in Ural mts.)				Vinogradov (1954)
Lupine *Lupinus sp.*	Alaska	leaf & stem	D	0.12	Kubota et al. (1970)
Lycium *Lycium andersoni*	Nevada	leaf	D	(1.2-2.7)	Wallace & Romney (1972)
" "	"	stem	D	(trace-1.1)	"
Lycium pallidum	"	leaf	D	(0.5-1.5)	"
Lycium shockleyi	"	"	D	0.5	"
Tomato *Lycopersicum esculentum*				0.10	Bertrand & Mokragnatz (1930)
" "	East Asia	fruit	W	0.09	Leung (1973)
" "	New England	"	W	(0.05-0.06)	Schroeder et al. (1967)
Apple *Malus malus*	United States	"	D	0.0219±SD 0.0003	Haller et al. (1969)
" "	East Asia	"	W	0.004	Leung (1973)
" "	New England		W	(0.25-0.34)	Schroeder et al. (1967)
" "	"	"	W	<0.2	"
Mango *Mangifera indica*	East Asia	"	W	0.003	Leung (1973)

Cassava *Manihot esculenta*	East Asia	root	W	0.009	Leung (1973)
" "	Lower Dahomy	"	D	(0.30-1.0)	Cresta et al. (1975)
Alfalfa *Medicago sativa*	Canada	hay		(0.01-0.62)	Arthur et al. (1953) Bowstead et al. (1942)
" "	Italy	"		(0.01-0.62)	Cambi (1950)
" "	United States	"		(0.01-0.62)	Mitchell (1951)
Horseradish, dish tree *Moringa oleifera*	East Asia	leaf	W	0.009	Leung (1973)
Banana *Musa sapientum*	"	fruit	W	0.006	"
" "	Virgin Islands	"	W	0.05	Schroeder et al. (1969)
Water milfoil *Myriophyllum sp.*	Italy	whole	A	19.9±SD 2.8	Merlini et al. (1971)
Water cress *Nasturtium officionale*				0.15	Bertrand & Mokragnatz (1930)
Swamp black gum *Nyssa aquatica*	United States	Leaf excellent for Co surveys			Lazar & Beeson (1956)
Black gum *Nyssa sylvatica biflorum*	"		D	800.0	"
Tobacco *Nicotiana tabacum*	Kentucky	leaf	D	(0.44-1.7)	Nadkarni & Ehmann (1970)
" "	"	stem	D	1.9	"
Pondweed *Najas sp.*	Italy	whole	A	3.8±SE 0.3	Merlini et al. (1971)

Water lily Nuphar sp.	Italy	whole	A	1.7±SE 0.15	Merlini et al. (1971)
Rice Oryza sativa		polished grain		(0.006-0.13)	Bertrand & Mokragnatz (1930)
" "	Japan	straw		(0.42-9.3)	Kandatsu & Mori (1957)
" "		grain	D	(0.018-0.027)	Haller et al. (1969)
" "	East Asia	"	W	(0.009-0.042)	Leung (1973)
" "	Lower Dahomey	"	D	(0.10-0.20)	Cresta et al. (1975)
Indian ricegrass Oryzopsis hymenoides	Nevada	top	D	0.5	Wallace & Romney (1972)
Cinnamon fern Osmunda cinnamomea	New England	frond	W	0.25	Schroeder et al. (1967)
Claytons fern Osmunda claytonia	"	"	W	0.18	"
Royal fern Osmunda regalis	"	"	W	0.13	"
Para grass Panicum purpurescens	United States		D	0.07	Beeson et al. (1947)
Dallis grass Paspalum dilatatum	"		D	(0.03-0.15)	"
" "	South Carolina		D	(0.03-0.15)	Mitchell (1951)
Bahia grass Paspalum notatum	United States		D	0.08	Beeson et al. (1947)
Vasey grass Paspalum urvillei	"		D	0.08	"

Passionfruit *Passiflora quadrangularis*	East Asia	fruit	W	0.007	Leung (1973)
Parsnip *Pastinica sativa*	"	root	W	0.012	"
" "	New England	"	W	0.18	Schroeder et al. (1967)
Lima bean *Phascolus lunatus*	East Asia	seed	W	0.078	Leung (1973)
Mungo bean *Phaseolus mungo*	"	"	W	0.165	"
Field bean *Phaseolus vulgaris*	(French) Russia			0.07	Skoropostizhnaya (1957)
" "	(wax) United States		D	0.1	Hurwitz & Beeson (1944)
" "	(field)			0.01	Bertrand & Mokragnatz (1930)
" "	" United States		D	0.01	Beeson (1941)
" "	California	root	D	3.5	Wallace & Romney (1977)
" "	"	stem	D	0.3	"
" "	"	leaf	D	0.4	"
" "	United States	bean	D	0.058±SD 0.002	Haller et al. (1969)
" "	East Asia	"	W	0.068	Leung (1973)
Timothy *Phleum pratense*	United States		D	(0.01-0.08)	Beeson et al. (1947)
Reed grass *Phragmites sp.*	Italy	whole	A	2.5±SE 0.56	Merlini et al. (1971)
White spruce *Picea abies*	New England	needle	W	0.04	Schroeder et al. (1967)

Black spruce *Picea nigra*	Canada	bough	D	(0.15-0.7)	Warren & Delavault (1957)
Lodgepole pine *Pinus contorta*	"	"	D	0.25	"
Ponderosa pine *Pinus ponderosa*	Washington	wood	D	(0.007-0.067)	Sheppard & Funk (1975)
White pine *Pinus strobus*	New England	needle	W	0.08	Schroeder et al. (1967)
Guava *Pisidium guajava*	East Asia	fruit	W	0.0024	Leung (1973)
Pea *Pisum sativum*		seed		(0.03-0.15)	Bertrand & Mokragnatz (1930)
" "	Russia	"		(0.03-0.15)	Meleshko (1957)
" "	United States	"		0.15	Mitchell (1951)
" "	" "	"	D	0.128	Haller et al. (1969)
" "	New England	"	W	(0.01-0.24)	Schroeder et al. (1967)
" "	East Asia	"	W	0.035	Leung (1973)
Bluegrass *Poa annua*	United States		D	(0.13-0.25)	Beeson et al. (1947)
Kentucky bluegrass *Poa pratensis*	"		D	(0.13-0.25)	"
" "	Canada		D	(0.13-0.25)	Arthur et al. (1953)
Christmas fern *Polystichum acrosticoides*	New England		W	0.31	Schroeder et al. (1967)

Balsam poplar *Populus balsamifera*	Canada	bough	D	0.3	Warren & Delavault (1957)
Cottonwood *Populus sp.*	"	"	D	(0.1-0.3)	"
Quaking aspen *Populus tremuloides*	Alaska	leaf	D	1.13	Kubota et al. (1970)
" "	"	twig	D	0.35	"
Pondweed *Potamogeton sp.*	Italy	whole	A	8.0±SE 1.0	Merlini et al. (1971)
Apricot *Prunus armeniaca*		leaf	D	0.4	Bertrand & Mokragnatz (1930)
" "		fruit	D	0.03	"
Cherry *Prunus sp.*		"	D	0.005	"
Black cherry *Prunus serotina*	Canada	bough	D	0.02	Warren & Delavault (1957)
" "	New England		W	0.27	Schroeder et al. (1967)
Bracken *Pteridium latiusculum*	"		W	0.28	"
Ostrich fern *Pteritis nodulosa*	"		W	0.17	"
Pasque flower *Pulsatilla patens*	Plants become white in presence of Ni-Co deposits in Ural mts.				Vinogradov (1954)
Pear *Pyrus communis*		fruit pulp		0.18	Bertrand & Mokragnatz (1930)
" "	United States	"	D	0.010±0.0002	Haller et al. (1969)

Pear *Pyrus communis*	New England	fruit pulp	W	0.32	Schroeder et al. (1967)
Radish *Raphanus sativa*	Russia			0.3	Skoropostizhnaya (1957)
" "	New England	root	W	(0.04-0.11)	Schroeder et al. (1967)
" "	"	leaf	W	0.34	"
Sumach *Rhus sp.*	"	"	W	0.45	"
" "	"	seed	W	0.27	"
Natal grass *Rhynchelytrium roseum*	United States		D	0.05	Beeson et al. (1947)
Wild rose *Rosa acicularis*	Canada, N.W.T. Dist. from smelter (mi):				O'Toole et al. (1971)
" "	" " 0.4	fruit & leaf	D	1.14	"
" "	" " 0.8	"	D	1.09	"
" "	" " 1.8	"	D	0.79	"
" "	" " 1.9	"	D	0.06	"
Ruppia spiralis	Caspian Sea		D	66.0	Vinogradov (1954)
Willow *Salix sp.*	Canada	bough	D	(0.08-0.35)	Warren & Delavault (1957)
Willow *Salix spp.*	Alaska	leaf	D	1.80	Kubota et al. (1970)
" "	"	twig	D	0.55	"
Rye *Secale cereale*	East Asia	grain	W	0.11	Leung (1973)
Catchfly *Silene cobaltica*	Katanga	(good indicator of Co)			NASA (1968)

Squirreltail grass Sitanion hystrix	Nevada	top	D	0.5	Wallace & Romney (1972)
Eggplant Solanum melongena	East Asia	fruit	W	0.005	Leung (1973)
" "	New England	"	W	(0.03-0.1)	Schroeder et al. (1967)
" "	"	leaf	W	0.33	"
Potato Solanum tuberosum	United States		D	0.06	Beeson (1941)
" "	East Asia	tuber	W	0.06	Leung (1973)
" "				(0.04-0.06)	Bertrand & Mokragnatz (1930)
" "	New England	"	W	(0.07-0.14)	Schroeder et al. (1967)
Mountain ash Sorbus americana	"	leaf	W	0.28	"
" "	"	berry	W	0.07	"
Spinach Spinacia oleracea				(0.07-1.2)	Bertrand & Mokragnatz (1930)
" "	United States		D	(0.07-1.2)	Hurwitz & Beeson (1944)
" "	New England	leaf	W	0.34	Schroeder et al. (1967)
" "	Lower Dahomey	"	D	(3.30-5.50)	Cresta et al. (1975)
Wiregrass Sporobolus sp.	United States			0.03	Mitchell (1951)
Basswood Tilia americana	New England		W	0.17	Schroeder et al. (1967)

Spanish moss *Tillandsia usnoides*	S. United States	whole	A	(<0.007-0.070) geom. mean 0.0098±0.00183	Shacklette & Connor (1973)
" "				good indicator of Co	"
New Zealand Spinach *Tetragonia expansa*	United States		D	0.09	Hurwitz & Beeson (1944)
Red clover *Trifolium pratense*	Japan			1.3	Kandatsu & Mori (1957)
" "	Scotland			(0.08-0.28)	Reith (1970)
White clover *Trifolium repens*	New Zealand			(0.17-4.6)	Askew & Dixon (1937)
" "	Canada			"	Arthur et al. (1953)
Wheat *Triticum aestivum*	United States	grain	D	0.01	Beeson (1941)
" "		bran		0.01	Bertrand & Mokragnatz (1930)
" "		grain		(0.01-0.04)	"
" "	Russia	"		"	Skoropostizhnaya (1957)
" "	United States	whole		(0.05-0.15)	Mitchell (1951)
" "	East Asia	grain	W	0.11	Leung (1973)
Blueberry *Vaccinium angustifolium*	Canada, Ontario Dist. from Ni smelter (mi):				Hutchinson & Whitby (1973)
" "	" "	1.0	D	10.0	"
" "	" "	1.4	D	8.0	"
" "	" "	4.6	D	6.8	"
" "	" "	6.5	D	8.0	"
" "	" "	8.4	D	5.5	"
" "	" "	31.0	D	5.5	"

Blueberries Vaccinium sp.	Canada	bough	D	(0.07-0.75)	Warren & Delavault (1957)
Vetch Vicia cracca	United States			(0.03-0.35)	Mitchell (1951)
Cowpea Vigna unguiculata	"	pea	D	(0.06-0.31)	Hurwitz & Beeson (1944)
" "	"	hay		(0.05-0.12)	Mitchell (1951)
" sp.	East Asia	seed	W	0.188	Leung (1973)
Grape Vitis sp.	United States	raisin	D	0.001±SD 0.0005	Haller et al. (1969)
Yucca Yucca brevifolia	Nevada	leaf	D	(0.5-0.8)	Wallace & Romney (1972)
Yucca Yucca schidigera	"	shoot	D	<0.5	"
Corn Zea mays	United States	kernel		(0.01-0.02)	Mitchell (1951)
" "	Russia	"		(0.01-0.02)	Skoropostizhnaya (1957)
" "	East Asia	"	W	0.224	Leung (1973)
" "	Lower Dahomey	"	D	0.30	Cresta et al. (1975)
" "	United States	"	D	0.01	Beeson (1941)
" "		"		(0.01-0.02)	Bertrand & Mokragnatz (1930)
" "	United States	"	D	(0.01-0.02)	Hurwitz & Beeson (1944)

Ginger *Zingiber officinale*	East Asia	root	W	0.019	Leung (1973)
Eel grass *Zostera asiatica*	Sea of Japan		D	3.9	Saenko et al. (1976)
Eel grass *Zostera marina*	Black sea		D	30.0	Vinogradov (1953)
Eel grass *Zostera nana*	Caspian Sea		D	15.0	"

COBALT IN ALGAE (1)

Species	Locality	Tissue	Analysis (2) PPM	Authority
Brown alga *Agarum cribosum*	Sea of Japan		D 0.9	Saenko et al. (1976)
Red alga *Ahnfeltia plicata*	Nova Scotia		D 0.49	Young & Langille (1958)
Alaria esculenta	Gulf of Kola		A 1.7	Malyuga (1946)
" "	"		A 0.45	"
" "	"		W 0.078	"
Brown alga, knotted wrack *Ascophyllum nodosum*	Nova Scotia		D 0.40	Young & Langille (1958)
" "	Scotland		D (0.41-0.73)	Black & Mitchell (1952)
" "	"		W 0.17	"
" "	Gulf of Kola		1.2	Malyuga (1946)

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(1) Blank spaces indicate information not available or not applicable. ? indicates questionable data.

(2) W, D or A indicates on a Wet, Dry or Ashed basis. A single number indicates a single determination or mean. (x-y) indicates range of values, followed by the mean. ± Standard deviation (SD), standard error (SE), median, and geometric mean are indicated as reported. pCi/g = picocuries per gram.

Brown alga, knotted wrack *Ascophyllum nodosum*	Gulf of Kola		0.22	Malyuga (1946)
" "	"		0.007	"
Green alga *Caulerpa racemosa*	Texas	D	(2.0-4.2)	Harriss (1965)
Red alga *Ceramium gardneri*	Oregon	W	0.77 pCi/g Co^{60}	Seymour & Lewis (1964)
Red alga *Chondrus crispus*	Nova Scotia	D	0.39	Young & Langille (1958)
" "	"	D	(0.22-0.34)	"
Red alga *Chondrus yendoi*	Sea of Japan	D	1.1	Saenko et al. (1976)
Brown alga *Chorda filum*	"	D	2.7	"
Brown alga *Costaria costata*	"	D	0.6	"
Green alga *Codium yessoensis*	"	D	0.3	"
Green alga *Derbesia marina*	Oregon	D	3.2 pCi/g Co^{60}	Seymour & Lewis (1964)
Brown alga, kelp *Ecklonia maxima*	S. Africa	W	0.0064± 0.0021	Van As et al. (1978)
Red alga *Endocladia muricata*	Oregon	W	0.0 pCi/g Co^{60}	Seymour & Lewis (1964)
Green alga *Enteromorpha prolifera*	Sea of Japan	D	9.8	Saenko et al. (1976)
Green alga *Enteromorpha tubulosa*	Oregon	W	0.0 pCi/g Co^{60}	Seymour & Lewis (1964)

Wrack *Fucus furcatus*	Oregon	W	(0.0-1.7) pCi/g Co^{60}	Seymour & Lewis (1964)
Wrack *Fucus serratus*	Scotland	D	(0.47-0.63)	Black & Mitchell (1952)
" "	"	W	0.12	"
" "	Gulf of Kola	A	5.3	Malyuga (1946)
" "	"	D	1.3	"
" "	"	W	0.28	"
Wrack *Fucus spiralis*	Scotland	D	(1.39-2.0)	Black & Mitchell (1952)
" "	"	W	0.37	"
Wrack *Fucus vesiculosis*	"	D	(0.65-0.91)	"
" "	"	W	0.21	"
" "	Nova Scotia	D	0.66	Young & Langille (1958)
" "	Great Britain Bristol Channel		(5.5-11.3)	Fuge & James (1974)
Red alga *Gigartina rachula*	S. Africa	W	0.018±0.003	Van As et al. (1975)
Red alga *Gigartina spp.*	Oregon	W	(0.0-0.87) pCi/g Co^{60}	Seymour & Lewis (1964)
Red alga *Halosaccion ramentaceum*	Nova Scotia	D	0.47	Young & Langille (1958)

Hesperophycus sp.	Oregon		W	(0.05-0.47) pCi/g Co^{60}	Seymour & Lewis (1964).
Brown alga Laminaria cichoroides	Sea of Japan		D	2.6	Saenko et al. (1976)
Brown alga Laminaria cloustoni	Scotland	frond	D	(0.21-0.56)	Black & Mitchell (1952)
Brown alga Laminaria digitata	"	"	D	(0.21-0.31)	"
" "	"	"	D	(0.22-1.46)	"
" "	"	stipe	D	(0.43-0.92)	"
" "	"	frond	W	0.03	"
" "	"	stipe	W	0.07	"
" "	Nova Scotia		D	0.25	Young & Langille (1958)
" "	"	frond	D	0.19	"
" "	"	stipe	D	0.52	"
Brown alga Laminaria hyperborea	Scotland	frond	D	0.39	Black & Mitchell (1952)
" "		"	D	0.14	Lunde (1970a)
Brown alga Laminaria longicruris	Nova Scotia		D	0.51	Young & Langille (1958)
" "	"	frond	D	0.11	"
" "	"	stipe	D	0.07	"
Brown alga Laminaria saccharina	Gulf of Kola		A	4.4	Malyuga (1946)
" "	"		D	0.15	"
" "	"		W	0.13	"

Brown alga Laminaria spp.	Oregon	W	0 pCi/g Co^{60}	Seymour & Lewis (1964)
Brown alga, kelp Macrocystis pyrifera		D	1.4	Vinogradov (1953)
" "	California	A	(0.3-0.4) 0.3±0.05	Boothe & Knauer (1972)
Green alga Monostroma zostericola	Oregon	W	0.0 pCi/g Co^{60}	Seymour & Lewis (1964)
Brown alga, channel wrack Pelvetia canaliculata	Scotland	D	(0.37-1.3)	Black & Mitchell (1952)
Brown alga Pelvetiopsis limitata	Oregon	W	0.03 pCi/g Co^{60}	Seymour & Lewis (1964)
Brown alga Pelvetia wrightii	Sea of Japan	D	2.2	Saenko et al. (1976)
Phyllaria sp.	Gulf of Kola	A	1.9	Malyuga (1946)
" "	"	D	0.46	"
" "	"	W	0.067	"
Red alga Phyllophora membranifolia	Nova Scotia	D	6.25	Young & Langille (1958)
Red alga Polysiphonia japoncia	Sea of Japan	D	5.3	Saenko et al. (1976)
Red alga Polysiphonia spp.	Oregon	W	0.0 pCi/g Co^{60}	Seymour & Lewis (1964)
Red alga Porphyra capensis	S. Africa	W	0.054±0.013	Van As et al. (1975)
Red alga Ptilota filicina	Sea of Japan	D	4.5	Saenko et al. (1976)

Red alga Rhodomela larix	Sea of Japan	D	5.4	Saenko et al. (1976)
Red alga Rhodymenia palmata	Nova Scotia	D	0.13	Young & Langille (1958)
Brown alga Sargassum pallidum	Sea of Japan	D	1.6	Saenko et al. (1976)
Green alga Spongomorpha arcta	Nova Scotia	D	0.09	Young & Langille (1958)
Red ribbons Suhria vittata	S. Africa	W	0.048± 0.004	Van As et al. (1975)
Brown alga Turbinaria turbinata	Puerto Rico	A	31.0	Lowman et al. (1966)
Green alga Ulva fenestrata	Sea of Japan	D	0.9	Saenko et al. (1976)
Green alga Ulva lactuca	Nova Scotia	D	0.69	Young & Langille (1958)
" "	"	D	(1.55-1.57)	"
" "	Gulf of Kola	A	5.5	Malyuga (1946)
" "	"	D	1.1	"
" "	"	W	0.22	"
" "	Great Britain	D	(4.0-40.0)	Boyden (1975)
Green alga Ulva spp.	Oregon	W	(0.0-0.1) pCi/g Co^{60}	Seymour & Lewis (1964)
" "	S. Africa	W	0.038±0.013	Van As et al. (1975)

"Green algae"	Puerto Rico	A 20.0	Lowman et al. (1966)
"Red algae"	"	A 26.0	"